JUN 29 1947

Occupational HAZARDS

THERE'S PROFIT IN PREVENTION

JUNE 1947

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ROUTE TO
OUR PLANT
E PROTECTION
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R INDUSTRY

IN THIS ISSUE: STRONG MEDICINE . . . PLANT FEEDING . . . LABORATORY PROTECTION . . . RECREATION PROGRAMS

Clear The Air for Production...

with KIRK & BLUM Downdraft Dust Control

● Dust-laden air in your shop not only brings protests from workers . . . dust makes itself felt continuously in your profits.

Pioneered by Kirk & Blum, *Down Draft* Dust Control Systems offer new cost reduction in castings cleaning. The dust produced in grinding, chipping and other operations is removed as soon as formed. Modern K & B Systems work so effectively that frequently cleaning operations are carried on in the same department with precision tools.

Whatever your problem in dust control, call in Kirk & Blum . . . an organization of engineers and mechanics, backed by more than 40 years of experience . . . yours for the asking. Illustrated below are a variety of Kirk & Blum *Down Draft* installations.

The Kirk & Blum Mfg. Co., 2802 Spring Grove Ave., Cincinnati 25, Ohio.

KIRK *and* BLUM

Write for any of these catalogs:
"Dust Collecting Systems in Metal Industries"
"Blower Systems for Woodworking Plants"
"Fan Systems for Various Industries"
"Industrial Ovens"
"Data on Kirk & Blum Production Facilities"

Left: Grinding castings in the R. K. LeBlond Mach. Tool Co. Cincinnati, Ohio.

Right: Grinding operation at the Cincinnati Bickford Tool Co., Cincinnati, Ohio.

Below: Surface grinding at Hobart Bros. Co. Troy, Ohio.

Center Installation at Monarch Tool & Mfg. Co. Cincinnati, Ohio.

Right: Installation at Cincinnati Shaper Co. Cincinnati, Ohio.

From Any Angle ...It's WILLSON For Safety With Comfort

Style V3-84C

A FLARE FOR PROTECTION . . . Side wings on this metal-edged, easy-to-wear Protecto-Shield* give extra protection . . . deflects splashing liquids from face, head and eyes.

Style X-41

FOR SPLASH-PROOF EYES . . . Rolled, resilient edges of this Over-All* rubber mask goggle hug facial contours to keep out chemical splash and metal spatter. Tops in comfort and protection.

Style No. 701

DOUBLE BARRELED PROTECTION . . . Two replaceable chemical cartridge filters highly effective against low concentrations of vapors; provide low breathing resistance.

*Reg. U. S. Pat. Off.

For complete information on these products and their application, as well as many more eye and respiratory protective devices, get in touch with your nearest Willson distributor or write us direct.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

DOUBLE WILLSON

PRODUCTS, INCORPORATED

READING, PA., U.S.A. *Established 1870*

209 WASHINGTON STREET, READING, PA., U. S. A.

CLEAN OILY WOOD FLOORS WITH GREATER SPEED . . . SAFELY!

Speed in cleaning floors is especially important where there's an oil hazard. And so is frequent cleaning on a regular schedule. *But* frequent cleaning calls for care in selecting the method. Should it be wet scrubbing, dry scrubbing, or dry cleaning? *Finnell*, manufacturers of floor-maintenance equipment for more than four decades, recommends wet scrubbing for cleaning oily wood floors. Here's why:

1. Wet scrubbing permits the use of a fast-acting mineral oil solvent, the most effective agent for emulsifying grimy oil and grease for speedy removal with mechanical equipment.

2. Wet scrubbing with a fast-acting mineral oil solvent, such as *Setol*, is *thoroughly safe* — won't injure floors regardless of frequency of cleaning. Obviously, too frequent sanding or grinding down the floor surface is costly in several ways.

The *Finnell* illustrated, a *Self-Propelled Scrubber-Vacuum*, is a complete cleaning unit *all in one*. It applies the cleaning solution, scrubs, rinses if required, and picks up. Has a cleaning capacity up to 8,750 sq. ft. per hour!

Finnell makes equipment for dry scrubbing as well as wet scrubbing, and for dry cleaning, waxing, and polishing. Also a full line of *Cleansers, Sealers*, and *Waxes*, as well as *Steel-Wool Pads, Mop Trucks*, and other accessory equipment.

For consultation, free floor survey, or literature, phone or write nearest *Finnell* branch or Finnell System, Inc., 3506 East St., Elkhart, Ind. Canadian Office: Ottawa, Ont.

FINNELL SYSTEM, INC.

Pioneers and Specialists in

FLOOR-MAINTENANCE EQUIPMENT AND SUPPLIES

BRANCHES IN ALL PRINCIPAL CITIES

Occupational HAZARDS

VOLUME 9 • No. 8

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COVER: Plant dispensaries keep cool, efficient fingers on the pulse of production in more ways than one, yet frequently are themselves denied good production design. In this shot taken at a Douglas Aircraft plant there is displayed a medical layout with a minimum of waste motion required. Good lighting and good flooring helps keep the heavy traffic moving efficiently. (Design and photo by the Austin Company).

"THERE'S PROFIT IN PREVENTION"

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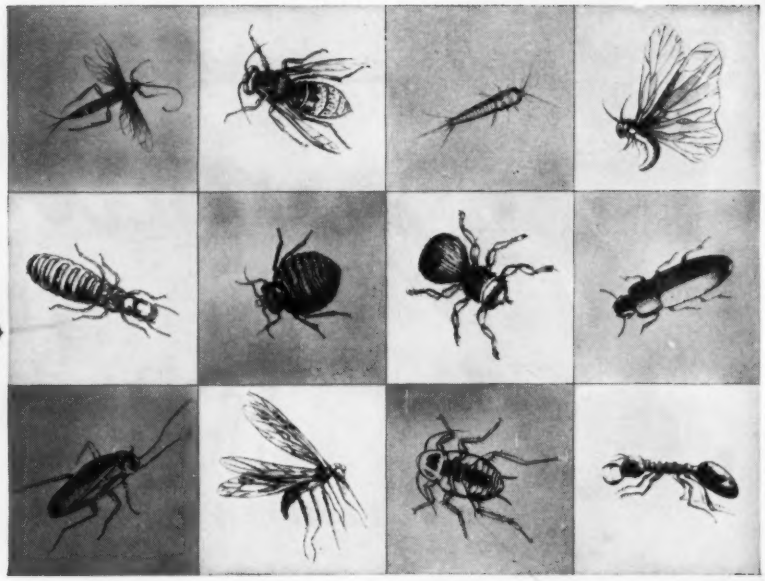
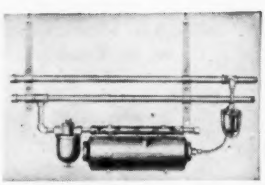
PICK the PESTS



...you'd like to give the "AIR" Forever!

Do your special insect pests crawl or fly? Thrive on Food or Fabric? Run rampant in a midget-sized cubicle or nest in the hard-to-reach places of a tremendous factory? Get rid of them with the West Atomizer —an effective scientific method of insect control. Designed to eliminate all pests *wholesale* with a fast "positive-kill."

A permanent installation which shortly pays for itself in time and labor saved (plus the tremendous advantage of complete coverage) the West Atomizer is perfected for efficient and effective use with compressed air. Just turn on the air valve and it *shoots out* a deadly fog of insecticide which reaches into the tiniest cracks and crevices. *Does its lethal magic as quickly in a mile-long plant as in a small store room.* Dispenses a "dry" mist so it won't wet floors, walls, or product if used as directed.



With the West Atomizer, use Vaposector Fluid—one of West's complete line of effective insecticides, specially prepared to help lick your insect problem. Vaposector is a concentrated, odorless insecticide—and is safe to use.

Why not consult one of over 475 trained West representatives at once?

WEST DISINFECTING Company

Products That Promote Sanitation

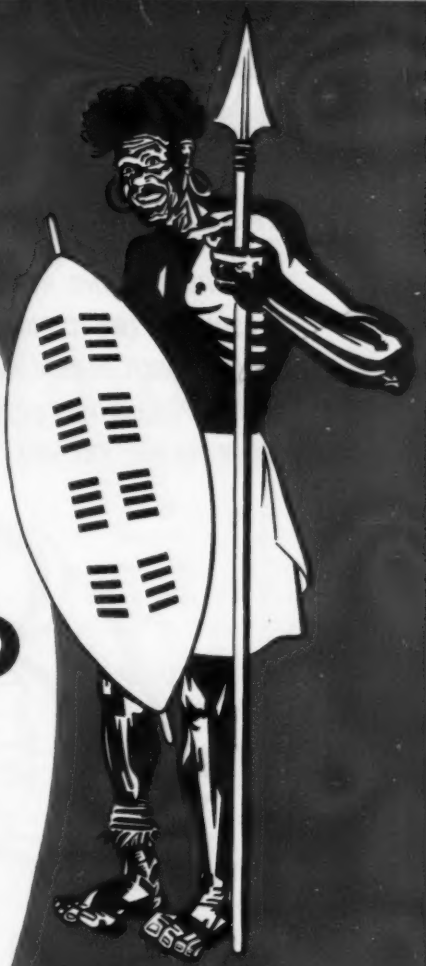
42-16 West Street, Long Island City 1, New York, N. Y.

BRANCHES IN PRINCIPAL CITIES OF UNITED STATES AND CANADA

CLEANSING DISINFECTANTS • INSECTICIDES • KOTEX VENDING MACHINES
PAPER TOWELS • AUTOMATIC DEODORIZING APPLIANCES • LIQUID SOAPS

PROTECTION WHERE NEEDED

Black Glove Blucher. Composition Cord and Leather Sole, Rubber Heel. Delivery-at-once.



..Insure Workers Feet In Sure Protection

with HY-TEST Safety Shoes

Even the primitive warrior dressed for danger. Workers should do no less. It's easy for them to guard against toe injuries by wearing Hy-Test Safety Shoes. The Anchor-Flange Steel Box Toe wards off falling objects that could cripple for life. Sturdily constructed with all leather in vital parts, Hy-Test Safety Shoes give long-lasting protection and complete comfort in every step. They're available in sizes 5 to 15, in widths AA to EEE.

HY-TEST SAFETY SHOES

THE WORLD'S LARGEST SELLING SAFETY SHOE

HY-TEST Safety Shoes

HY-TEST DIVISION • INTERNATIONAL SHOE COMPANY • ST. LOUIS 3, MO. • EASTERN OFFICE • MANCHESTER, N. H.

ANCHOR FLANGE STEEL BOX TOE

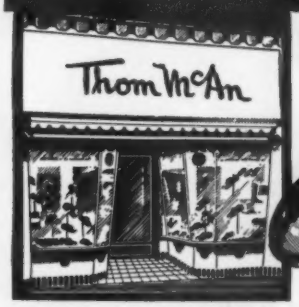
This flange adds extra strength to the steel arch's sidewall. Anchored between insole and outsole, it also serves to resist shifting, tilting, and cutting through outsole under impact.

One Way To Do It! — by Rube Goldberg

SPEEDING THE LATE-STAYING GUEST

WHEN HOST YAWNS, HEAD TILTS BACK AND MOVES LEVER **(A)** CAUSING PIN **(B)** TO PUNCTURE BALLOON **(C)** WITH LOUD REPORT WHICH CAUSES MIDGET RUNNER **(D)** TO START SPRINT, PULLING ROD **(E)** OUT OF CLOSET TO HAND GUEST HIS HAT AND COAT WITH A FRIENDLY HINT.

MAKE THIS STORE YOUR SAFETY SHOE DEPT.



More than 500 stores in over 300 cities.

SAFETY SHOE DIVISION
25 W. 43 ST., NEW YORK 18, N. Y.

ONE WAY to approach the foot safety problem in your plant is to provide Safety Shoes of some brand that your men don't know—or perhaps don't like.

THE EASY WAY is to select Thom McAns, "the Safety Shoes that workers wear WILLINGLY"—because they already know and trust the Thom McAn name.*

THE EASIEST WAY OF ALL—"LET Thom DO IT"
Let us stock our Safety Shoes for you in our own Thom McAn retail stores, fit them with our own trained fitters, without cost or obligation on your part. You, freed of "shoe store problems," can concentrate on more important things, make yourself a more valuable man. Proof? Details? Write for them—today.

*MORE MEN buy their shoes from Thom McAn than from ANY OTHER shoe store organization IN AMERICA

LOOK FOR THE RED BAND

Announcing Redmont

A NEW RUBBER-COATED SAFETY GLOVE by Edmont

LOOK FOR THE RED BAND

Here is an outstanding development in a safety glove that offers many advantages to industrial workers handling liquids or wet materials. Redmonts are coated with oil-, grease- acid-, and caustic-resisting rubber. Heavy coating over strong fabric makes them fully liquid-proof; tough and long wearing; won't snag or tear. The Redmont by Edmont sets new standards of safety for all types of rubber gloves.

MANY NEW SAFETY FEATURES

1. **THREE NEW LENGTHS** to meet every need. Longer cuffs for better protection. Overall lengths: 10" SAFETY CUFF, 12" and 14" GAUNTLETS.
2. **NEW FORM-FIT PATTERN**, longer palm, better-fitting, free-hand action without binding; full hand size, more comfortable.
3. **CURVED FINGERS** — originated by Edmont, made by a special molding process that provides accurately curved fingers, free hand action and better grip.
4. **NEW THUMB CONSTRUCTION** — curved thumb crotch, long span, greater comfort, no bind. Gives more wear and greater flexibility. No patch or reinforcement needed.
5. **NEW SAFETY BAND** — the red band on the cuff identifies the new Redmont glove at a glance — signifies SAFETY for hands working in any fluids.
6. **IMPROVED COATING** — oil-, grease-, acid- and caustic-resisting rubber is thoroughly bonded to strong fabric by Edmont's exclusive process. Seams are tight and safe against harmful fluids.

The new Redmont is a scientifically designed product by Edmont — largest manufacturer of fabric-lined rubber gloves. Months of testing in our laboratories and on the job assure these new gloves will give as much as 50% more wear. Workmen will enjoy wearing Redmonts, will appreciate the greater safety and comfort.

We're ready with Redmont. Order from your Safety Equipment, Mechanical Rubber Goods or Industrial Supplier.

NOW AVAILABLE IN

10 inch SAFETY CUFF
12 inch GAUNTLET
14 inch GAUNTLET

EDMONT MANUFACTURING COMPANY
514 Orange Street, Coshocton, Ohio

Edmont
TRADE MARK REG U S PAT OFF

Fabric-Lined RUBBER GLOVES

SPECIALISTS IN THE MANUFACTURE OF RUBBER-COATED GLOVES

JACKSON EYESHIELDS

to Protect Eyes and Face for Industrial SAFETY

Type BX

PATENTED

For All Gas Welding, Cutting and Brazing. Our present model has been improved in many respects.

Headgear and Cross Strap over top of head are made entirely of extruded plastic. They are moisture proof, will not shrink or warp, and may be thoroughly sterilized.

Multiple adjustment gives exact and lasting fit.

Leather *Sweat Band* gives added comfort.

Skull Cap of fireproof duck available at small extra cost. New *Headgear Pivot Assembly* is semi-permanent. Tension is locked in at the factory. No washers and nuts to back off and get lost.

Sturdy *Side Protectors* hold pivoted *Lens Retainer*, made of durable opaque molded plastic. Standard 2″ x 4⅛″ *Lenses* are held securely in place, yet are easily replaced. Available in F.S. shades from 3 through 6. Please specify shade desired.

Type J-1

For Metal Finishing, Metal Pouring, Spot, Gun, and Flash Welding, Wood Working, etc.

Present model has vastly improved *Headgear* made of extruded plastic. *Sweat Band* and *Pivot Assembly* same as described above for Type BX.

Improved plastic coated *Spark Deflector* protects the forehead.

Visor is made of fire repellent, flexible, clear Plastascele in three thicknesses: .020″, .030″ and .040″. Also in three shades of green: light, medium and dark in the .020″ thickness only. All are available in three depths: 4, 6 and 8 inches. Please specify when ordering.

All visors are 11 inches wide for "all around" protection.

All visors have a wire-reinforced gimp binding. Wire reinforcemen enables user to mold shield to his requirements.

Visor is attached to the outside of the Spark Deflector to withstand greater impact. Distance of visor from face is adjustable.

HEADREST SPECTACLES

LTB-50

For Light Welding, Cutting, and Brazing Operations

These spectacles are intended for general use where complete eye covering is unnecessary. They take 50 mm. lenses, shades No. 3 to No. 8.

All-plastic in design, yet of rugged construction, the headrest evenly distributes the weight over the entire head, thus relieving the usual pressure on the nose and face.

"LTB-50" can be comfortably worn over prescription glasses and is easily adjusted to fit any head . . . Distance between spectacles and eyes is also adjustable . . . All-round ventilation prevents fogging—provides greatly improved visibility.

Weldor can easily lift spectacles to "up" position, inspect his work, check his equipment. Then, with a flip of the finger, the spectacles are reset and "on guard."

Ask your Jackson dealer, or write to us . . .

JACKSON PRODUCTS

31739 Mound Road, Warren, Michigan

wrap-around **uniforms**

—a woman's first choice in **work wear**

No dressing rooms needed *where wrap-arounds are used. They're on and off in a jiffy... protect street clothes from dirt and wear. Sturdily made of white Sanforized cotton, they launder beautifully... help keep your women spic and span. Wrap-around style (#317) gives twice the service from every laundering because front is reversible. Ideal for cafeteria workers, candy factories, canning or other food processing plants, dairies, perfume or drug plants, laboratory wear... or wherever women are employed in light manufacturing. Specify button-back or tie belt in ordering.*

- **18 other styles to choose from.**
- **Send for complete style file.**

STYLE #67
Hoover-type

STYLE #317
Reversible front

RANDLES MANUFACTURING CO., OGDENSBURG, N. Y.

Executive

You've never seen a safety shoe that looks like this!

Safety shoe in the plant!
Street shoe after hours!

TWO SHOES IN ONE!

This is your answer to the problem of getting your men to invest in an "extra" pair of shoes for safety on the job. Write, wire or phone *today* for a Lehigh representative or a sample pair.

Yes...with the same Lockrim* steel toe box found in every pair of Lehigh safety shoes. High carbon, cold rolled, Austempered steel. Patented Lockrim* can't cut into sole under heavy impact. Locks toe box in place for life of shoe.

LEHIGH
Division of the ENDICOTT JOHNSON CORPORATION
SAFETY SHOE COMPANY
ALLENTOWN, PA.
WESTERN OFFICE: 12th AND SPRUCE, ST. LOUIS 2, MO.

*REG. U. S. PAT. OFF.

PRESS-PROOFED *Prevention*

CULLED FROM THE NATION'S PRESS

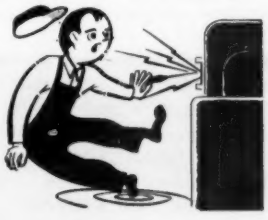
TOO LATE TO PREVENT THESE ACCIDENTS, BUT—

Resumes of these industrial accidents were gleaned from actual newspaper reports. Preventive measures and suggested safe practices are recommended here to help you cope with similar mishaps should such situations occur at your plant. Clip and save.

Pomona, Calif. Progress Bulletin:
Ralph Dweese, 21, of 238 W. 4th street, Claremont, was treated for second and third degree burns resulting from an explosion which occurred at the El Camino Citrus Association. He relit a gas boiler in the washer department in which the flame had gone out.

Prevention:
To prevent explosions due to burner flame "snap-out" the supply of gas should be turned off and all gas passages surrounding the burner adequately ventilated with fresh air before relighting fire.

Akron, O., Beacon-Journal:
Charles Medlin, 18, 365 Rhodes Avenue, was electrocuted at the United Plated Products Company, when he started to tighten a bolt on a filter machine while standing in water.

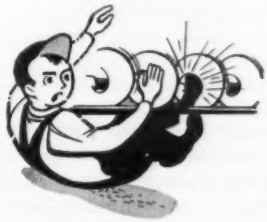


Prevention:
Water makes a perfect conductor and should never be allowed to stand as spillage around electrical equipment. Rubber non-conducting mats are required where workers must stand to repair or operate such machinery, and before any maintenance work is done the machine power switch should be thrown open and tagged to prevent accidental short circuiting through energized equipment.

Waterbury, Conn., Republican:
Joseph Gans, 45, 128 Cherry Street, an employee of the Waterbury Farrel Foundry and Machine Company, fractured his leg when a cast-iron flywheel fell from his grasp as he was carrying it through the foundry.

Prevention:
Workers must be cautioned not to attempt to lift heavy parts alone nor to attempt cartage of unwieldly castings without mechanical assistance. Slings should be available for awkward shapes which can be handled by two men safely. Non-slip gloves should be issued all men assigned to the handling of castings and safety shoes should be worn throughout the plant areas where heavy parts are a danger.

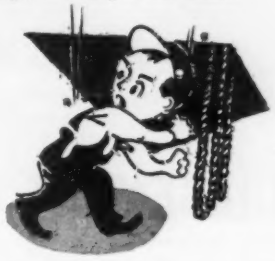
Columbia, Tenn., Herald:
While performing maintenance work on machinery at the Hoover & Mason Phosphate Company, Leroy Carroll, 21, lost his footing and was caught in a screw-type conveyor. The slow moving machinery man-



gled his foot so badly that it was later amputated. Other workmen attracted by his cries for help, stopped the machinery and cut him free by use of acetylene torches.

Prevention:
No attempt at maintenance should be made without first turning off machine power and placing of proper guards and warning signs around repair zones. Non-slip floor surfaces or rubber matting should be provided at conveyor loading and discharge stations to prevent slipping and falls. Remove excess oil, grease and water drippings about the machinery first.

Hanover, Pa., Sun:
Walter Rickard, 62, 95 Steinwehr Avenue, narrowly escaped death in an elevator pit at the Gettysburg Panel Company plant. He descended into the pit to make repairs and while he was there some one entered the elevator and started to descend. The bottom of the elevator struck Rickard as he was making a futile attempt to escape the shaft.



Prevention:
Elevator operation should always be prohibited during pit repairs. Locking elevator and shut-off of power supply as well as roping off entrance and placement of caution signs or flags are added safeguards.

Utica, N. Y., Press:
Illuminating gas fumes leaking out of a sausage drying room of the Hygrade Products plant overcame Foreman Frank Ertner, 49, 216 Rutger Street. Found unconscious, he was aided by officers who applied a resuscitator, quickly brought the employee about and are credited with saving Ertner's life.

Prevention:
Proper ventilation should have been assured in the drying room. Where lighter-than-air sources of fuel are used in closed areas, oxygen deficiency tests should be made at intervals to check the atmosphere. Protective artificial respiration devices can be kept within easy access for use in case of emergency.

The scene in the background is at one of the New York Locals showing employer-supported vacation benefit funds being paid out to members. The ILGWU believes workers must have regular vacations to stay fit.

MANAGEMENT AND LABOR MAKE STRONG MEDICINE

The ILGWU has opened the gates to health for many workers by teaching them the ways and means of fighting industrial diseases, and has made them actual participants in the administration of employer-worker health programs.

This reproduction from the Bettman Archive depicts an accident scene at a New York factory around 1870 with the latest in "ambulances" waiting to take the injured worker to the hospital. Conditions such as these fostered the development of the ILGWU in the needle trades.

By
DR. LAZARE TEPER
ILGWU Research Director

TODAY over 275,000 members of the International Ladies' Garment Workers' Union out of the total of 355,000, throughout the United States and Canada, are covered by some 500 collective agreements with individual employers or employer associations which provide employer-financed health and vacation funds. Almost every new agreement now consummated embodies health and vacation provisions. As agreements come up for renewal, opportunities are exploited for the liberalization of the existing programs in the light of accumulated experience.

Each of the existing health and vacation funds has its origin in the collective bargaining negotiations between the different local unions of the ILGWU and the employers of their members. When a contract is negotiated, a clause is inserted which provides for an employer contribution to a special health and vacation fund. Employer contributions vary in amount, inasmuch as a few funds provide only for health, or vacation benefits, while others offer an integrated program. Typical contributions ranging between 3½ and 4½ per cent of the payrolls finance both health and vacation benefits. The benefit funds are maintained separately from all other union funds and are administered by the local unions directly rather than by the parent body.

It is a part of the policy of the International Ladies' Garment Workers' Union to foster local autonomy in the administration of benefit funds. Self-government is preferred to centralized control in order to foster a sense of understanding and responsibility on the part of the union members in the handling of their own welfare. Local worker committees watch over their own funds, and establish their own rules. For their guidance, certain basic policies have been adopted by the International Union. For example, eligibility standards were established which permit every member in good standing, after membership

of 6 months, to participate in the health and vacation program wherever it exists. The ILGWU also has appointed a Director of Welfare and Health who assists and advises local organizations on their welfare problems. He also acts as a review authority on any appeals from local decisions regarding benefit claims, studies actuarial experience of the different funds, and supervises their finances.

Benefits Vary

Benefit payments made by the different local unions vary in type and amount, depending on their income and the composition and needs of their memberships. Clearly, a local composed of males would hardly be interested in maternity benefits, while one which has women members may feel very strongly about this. Generally speaking, a health and vacation fund provides the worker with a vacation benefit of approximately one week's duration. In most instances, the benefits do not vary among the members of the same local employed in the same work. Thus the higher-paid workers are apt to get somewhat less than their earnings for one week's time, while the lower-paid ones receive a sum larger than their weekly wage.

Health benefits range between $10 and $15 per week, after a waiting period of one to four days, dependent on the particular plan. In case of hospitalization, additional benefits of $3 to $5 per day are paid for periods ranging from 21 to 31 days. Some plans also provide surgical benefits up to $50 and maternity benefits of between $25 and $50. Workers suffering from tuberculosis may receive lump sum payments from $200 to $300, or in some instances, weekly benefits while receiving care in a sanatorium. Some local unions pay for the purchase of eye-glasses. Others provide funeral benefits, of varying amounts, which the family of the deceased receives in addition to a $150 benefit which is provided to all members under the ILGWU constitution.

Preventive medical care is fostered by the ILGWU through grants, by numerous locals, of prepaid medical credits for their members in the amounts of $15 to $25 per year. These medical credits can be used, at the member's discretion, in the treatment and prevention of a wide range of afflictions. In many areas diagnostic functions are carried on by the medical institutions organized and operated by the ILGWU. In addition to the Union Health Center in New York, which is equipped to render a wide variety of medical services, and which now handles over 200,000 visits a year, several similar centers have been established throughout the country in the past two years. The present plans call for a total of some twenty such Health Centers.

Early History

Concern over the welfare of its members has always been a part of the credo of the International Ladies' Garment Workers' Union. Early in its history, at the turn of the century, this interest was increased by the sweatshop conditions of the needle trades. Small shops located in tenement buildings were characteristic of the industry. Overcrowded, poorly ventilated, full of fumes caused by the coal and gas irons, atrociously lighted, without sanitary facilities, these factories were veritable breeders of disease. Tuberculosis became an occupational disease of the garment makers.

It was, therefore, suggested that employers make a weekly contribution to a special fund set up by the union based on a percentage of the payroll which would approximate, over a year, the cost of one week's vacation per employee. The union proposed then to disburse this fund to the workers on the basis of their status as members of the union, irrespective of the fortunes of the particular employer or the amount of actual employment of the workers during the year. The plan proved an instant success and was adopted by other locals. It was then realized that employers could be interested in not only financing vacation benefits but health benefits as well on the same basis.

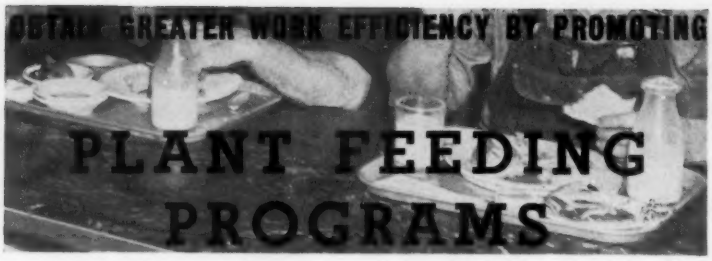
Mass chest X-rays are part of the giant program conducted by the Union Health Centers.

The ILGWU Health Center in New York handles over 200,000 visits annually and is one of 20 which the union plans to establish throughout the country in order to better its worker health program.

The ILGWU still views its health and welfare programs as an experiment. Accordingly, the ultimate benefit structure of these plans is being evolved with utmost caution. Since the income of the various funds is geared to the industry's payrolls, the revenues may be adversely affected in the years of poor business. Reserves are therefore being built up to permit uninterrupted functioning of the health and welfare program. New benefits are added slowly, as experience is developed and the long-range costs of the program are computed. But even so, payments made by these funds to the workers add up to an impressive total. In 1946 the funds paid out to the workers were close to $6,500,000 vacation benefits and about $2,500,000 in the form of various health benefits. Close to $200,000 was expended in the building of the various medical centers.

The experience of the ILGWU in the operation of the health and vacation plans demonstrates that there exists a great need among the garment workers, or for that matter, among all Americans, for wider and more effective medical care.

from MANAGEMENT'S POINT OF VIEW



Feeding Program Suggestions

If you are considering new installation, or expansion and improvement of present industrial feeding facilities, the use of one of these in-plant feeding programs or efficient feeding agencies should be considered. Provide palatable food and essential nutrients to help employees utilize their work hours more fully.

Types of In-Plant Feeding

1 A centralized plant cafeteria or service lunch room located within the plant.

2 Provision by a central commissary providing food by food truck to various work stations throughout the plant.

3 A combination service offering employees in the main plants a central cafeteria service and canteen feeding stations located in convenient points to serve workers in outlying sections.

4 Box lunch service — boxed meals prepared by the company kitchen or commercial caterer providing for workers throughout the plant.

Industrial Food Service

1 Lunch rooms and concessionaires that are plant-owned and managed usually operating on a cost basis and in certain instances subsidized for certain operating costs.

2 Plant-owned and employee-managed cafeterias and canteens. Here plant management usually provides equipment, space, etc., subsidizing heat, light and water service. Employee committees assume responsibility of food service operation.

3 Leasing of food service facilities to an industrial food concessionaire who assumes all responsibility for provision of food on a percentage or profit basis.

4 Outside food caterer contracting with management to deliver box lunches to employees.

FEEDING the industrial worker is part of present day industrial organization. Providing adequate meals for employees means evaluating the relationship between nutrition and health, morale, fatigue, industrial accidents and diseases among workers. Once it is understood that good nutrition is a vital factor in keeping workers physically fit, then the plant feeding facilities become an integral part of the production picture.

Four major considerations make good in-plant feeding practically a necessity.

(1) No source of adequate, sanitary facilities in surrounding restaurants or lunch stands.

(2) Lack of regularly scheduled lunch periods, or too short lunch periods, making it practically impossible for workers to go away from the plant for meals.

(3) No home facilities to provide carried-from-home lunches.

(4) Working of irregular shifts, causing change in routine eating habits.

In taking care of employees' nutritional needs through in-plant feeding, if a survey reveals it is impossible or impractical to have a cafeteria or lunch counter, mobile or stationary canteens or box lunches should be considered. Small plants usually avail themselves of centralized food service systems because it makes possible a varied selection of food and provides comfortable dining rooms. The latter afford greater opportunity for relaxation and sociability.

In regard to meal planning, the Illinois State Nutrition Committee recommends the following foods as adequate to furnish at least one third of the worker's daily dietary requirements:

Eight-ounce glass of milk or two foods made from milk, each equivalent to one-half cup of milk.

Three-fourths cup of green or yellow vegetables, or fruit.

One medium or two small potatoes.

One serving of meat, cheese, fish or eggs.

Two slices of whole-grain or enriched bread.

One square of butter or fortified oleomargarine.

One of the following groups of foodstuffs: 4½ ozs. of grapefruit juice, one orange, 4½ to 5 ozs. of raw cabbage or green pepper or a mixture of the two.

According to a survey made of industrial workers the most common choice of foods and the per cent of workers so choosing is as follows:

	%
Meat and other protein	72.1
Whole grain and enriched bread	60.5
Potato	54.0
Butter	50.8
Milk	49.3
Vegetable	38.5
Dessert	35.6
Coffee, Tea	33.1
Soup	24.0
Fruit	14.1
White Bread	5.9
Carbonated Drinks	3.7

The above does not include the vast amount of coffee, tea, or carbonated drinks used as a supplement to the noon meal by a majority of those who carry a lunch box.

Small plants in a community often join in the employment of a professional nutritionist to supervise the planning and marketing of food for each meal. In other instances, small plants avail themselves of the services of local or state nutrition committees for advice.

In plants covering large areas and employing thousands of workers an installation of a central commissary is generally found most practical. Food is prepared and transported by sanitary food trucks to workers at various points throughout the plant. For plants using this decentralized feeding system, a simple and effective food control commonly used is to load food at a kitchen and convey the food trucks to feeding stations throughout the plant. The workers file past the truck and are served their food choices.

• Hiding behind a barrel is in direct contrast to the safest technique we know . . . using CESCO safety equipment. • Come into the CESCO plant and you'll see the research staff putting CESCO safety devices through their paces—constantly running tests, checking design features and boosting maximum standards for CESCO products.

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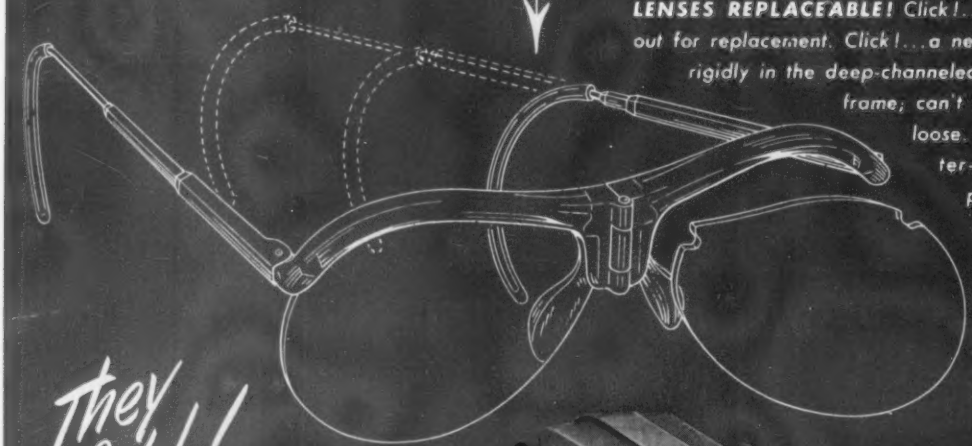

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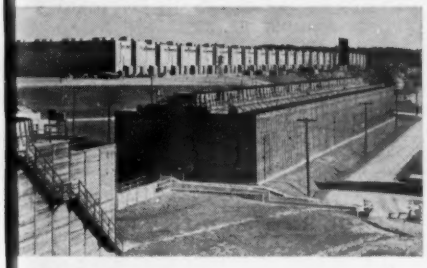
The Pay Off—OAK RIDGE—A SAFE PLACE TO WORK



Two views of the operational area at the home of the atomic bomb, Oak Ridge, Tenn.

The smashing of the atom in the Manhattan Project, and the difficulty presented to the safety engineer in the process, resolved itself into one of protection for workers against many old familiar hazards and a few new ones.

By Norman H. Marsden
U. S. Engineer Office, Oak Ridge, Tenn.

WE have been bombarded with fancy scientific verbiage about protons, neutrons and atoms ever since the first Atomic Bomb was dropped on Hiroshima. The complexities of nuclear physics, however, are so involved that only scientists and students of the higher branches of physics, chemistry and mathematics comprehend them. The many and various explanations of the power of the bomb, how it operates, and the effects of radiation from it, leave the layman groggy from trying to understand atomic fission. It all contributes to the general feeling that the place in which the materials for atomic power are processed must indeed have demanded extraordinary safety precautions, and the fact remains that continuous protection has been maintained for the thousands employed on this unprecedented project. Records show that it is a safe place to work.

Where accident prevention programs of industry are ordinarily maintained on the sound basis of humanitarianism and economy, the safety program of the Manhattan Project was also predicated on the additional basis of security.

With such restrictions, the Manhattan Project safety engineer had to establish an accident prevention program to cover one of the greatest construction jobs in history, to care adequately for the various and intricate phases of production and manufacture, to study processes and work out procedure for operations which never before had been attempted, and to check plans of buildings and operational equipment the like of which has never been seen.

The job was immense. It involved work throughout the nation; in colleges, manufacturing plants and laboratories, further complicated by the fact that secrecy was uppermost. It involved the building of two cities from "scratch."

Government safety engineers at Oak Ridge, Los Alamos and Hanford coordinated accident prevention programs among the contractors, assisted them in solving their safety problems. It was not an easy matter to keep all contractors maintaining safe operation when another Government office was bringing pressure on them to "get the job done." On a construction job of this size, the establishing of procedures was necessary. Wearing of hard hats was compulsory for all entering certain areas, while no person could enter another area without goggles. Other blanket rules were effected and enforced, and it speaks well for officials of the contractors and the government who cooperated and did not request personal exceptions to the regulations.

The major troubles which had to be dealt with fell into that usual, run-of-the-mill category which safety engineers face every day in their own plant and locality. The importance of the common hazard was recognized, and the Manhattan Project safety engineers devoted most of their attention to the elimination of these hazards which continue to kill and maim every day throughout the world.

In the development of plans, which sometimes doubled overnight from the requirements of the day before, close contact was maintained with the planning and design office to incorporate safety in the buildings before they reached the blueprint stage.

As the towns began to take shape, people moved into the houses, stores, churches and banks and the scope of the accident prevention program was extended.

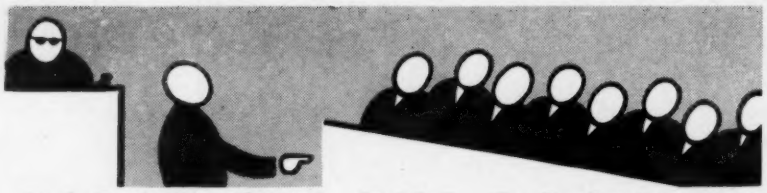
Plant construction was continuing at the same pace. As fast as buildings were completed, the operating forces would take over. Often before completion, operations employees were at work.

Now another problem developed, that of industrial safety. It was necessary to train new employees for work of an unusual nature. Recruits for operating personnel came from all over the country. They underwent a severe and rigid course of instruction in which safety was inculcated as a part of the work procedure, not something which was applied later, as is frequently the case.

Because of the dearth of experienced operations employees and the probable danger to personnel, it was decided to design for the remote control of processes and equipment, and such design was instituted wherever possible. If the operation could be performed mechanically or automatically, it was so planned. At the present time, when going through some of the plants, the absence of operators except in the control room is noticeable, and the casual visitor gets the impression that the plant is deserted.

After the atom bombs became past history, an opportunity was presented to evaluate our work and the results are gratifying indeed. In addition to an adequate supply of standard protective equipment furnished the worker, on a number of occasions we insisted on unusual protection, at considerable cost, against a hazard which was suspected to exist without being sure how many accidents we could prevent. Now at the pay-off, we know that the special protection was fully justified. We cannot, however, afford time for self-satisfaction and the consequent relaxation of vigilance. Like many phases of high hazard work where trouble is expected or anticipated, the operation in the plant is completely surrounded with safeguards, but where the work is commonplace in nature, safeguards are likely to be ignored or forgotten. It follows in the Manhattan Project, as elsewhere, that where the worker becomes more familiar with a hazard, the more apt he is to disregard it and to take no precaution against it.

Injuries from the heretofore undetermined hazards and operational phases are at a minimum. Ours are the garden variety of accidents: falls, sprains, bruises, burns, and fractures of the well-known type from familiar sources.



RIGHT OFF THE DOCKET

The trend of litigation on workmen's health and accident compensation is reflected in these briefs on the latest and most representative cases coming to trial in the intervals between issues. Familiarity with this trend is important to every industrialist. Clip cases and file for future reference.

Willful Violation of Safety Order by Employee

PENNELLA, a minor 20 years of age, worked on an assembly line, placing elements in battery cases. The parts which Pennella and his fellow workers on the assembly line used in their work were customarily brought from the storeroom by a small electric truck. A driver was employed to operate this truck and Pennella had been at least twice specifically forbidden by his foreman to operate it.

On the date of the injury, Pennella, following a rest period, picked up some parts which were needed to continue his work, placed them on the electric truck and drove it to the assembly line. In attempting to get

off the truck at the assembly line, he accidentally started it again and was crushed against a wall, receiving the injury to his leg which resulted in the award under attack.

The commission had granted compensation after finding that Pennella sustained an injury arising out of and in the course of his employment, but that said injury "was caused by the serious and willful misconduct of said employee," and that he knowingly and intentionally violated an express order of his employer to the effect that he was not to operate the electric truck. By reason of the employee's misconduct, the award of compensation was reduced 50 per cent.

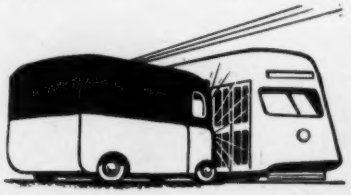
Company contends that since the employee violated express orders he stepped outside of the scope of his employment and, therefore, an award is not justified. The claimant objected to the 50 per cent penalty. It was concluded that the claimant was entitled to compensation; that he was in the performance of doing an act in the scope of his duties in bringing parts from the storeroom to the assembly line and that the fact that he willfully violated an instruction would not limit the sphere of his employment.

Pennella had done exactly what he was hired to do at the very place where he was required to perform his duties, but in a manner forbidden by his superiors. This transgression was wholly in the sphere of his employment and consequently does not prevent the recovery of compensation. The extra hazard to which he exposed himself did not affect the employer's liability. Pennella was guilty of serious and willful misconduct justifying the reduction of award of compensation by 50 per cent. The award was affirmed.

Auto Lite Battery Corporation et al vs. Industrial Accident Commission
January 14, 1947
District Court of Appeals, Calif.
176 Pac. Rep. 2nd series, page 62.

Employee Fails to Abide by Instructions

A TRUCK driver was injured in a collision with a street car while attempting to take truck to garage.



This was an hour after employer's instruction required him to make the trip.

(Turn to Page 29)

ELEVATOR HAZARD SIGNS

CAUTION
GATE MUST BE DOWN WHEN ELEVATOR IS UP
SAFETY FIRST
DONT RIDE ON THIS ELEVATOR
IT IS FOR FREIGHT ONLY
CAUTION
BE SURE ELEVATOR IS LOCKED WHEN LOADING AND UNLOADING
NOTICE
THIS GATE MUST BE CLOSED BEFORE THE ELEVATOR CAN BE OPERATED
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ACCIDENT PREVENTION SIGNS IN STANDARD COLORS AND DESIGNS

Do You Have the Right LABORATORY PROTECTION?

Specialized lab needs that counteract unusual hazards are shown above: (Top row) respirators, glassblower goggles and safety cans; (Middle row) air pump at left, bottle tilter, center, and carboy inclinator, right, all help to make the dispensing of corrosive liquids safer; (Bottom row) for hot or corrosive materials, rubber aprons and sleeves, rubber and asbestos gloves.

The degree of safe practice observed in any plant laboratory stems directly from the attitude of the person in charge. Most authorities agree that a conscientious demand for observation of safety rules at all times has direct results in reducing accidents in these notorious danger spots of industry. Fisher-Eimer and Amend, laboratory suppliers, New York City, represent pictorial and editorial reference for this article.

★

WHEN questioned closely, there are few safety directors who will not admit that they secretly or openly consider the plant laboratory a potential headache. As a source of fires and explosions it can endanger the entire plant. As a puttering place for dangerous chemistry and untried substances it shows better on someone else's accident record. Usually, the safety man relies on the boys in the laboratory to protect themselves and to keep him out of their impromptu skirmishes into the hazardous.

He is partly right. The lab men know best what they are dealing with. But frequently they need a little help in self-protection, or a little persuasion in using the protective equipment that is provided. It would be well for the plant safety man to follow through.

In general, the dangers of lab work include exposure to storage risks, handling risks, faulty techniques, electrical shock, burns, toxic fumes, poisons, fires, explosions and disposal risks.

On the question of storage, one of the important essentials for safe operation of a laboratory is an adequate, efficiently planned storage room. Good housekeeping means prior planning and rigid adherence to the plan, even on so-called harmless stocks. It includes exhausting of fumes, labeling of poisons, safety disposal cans, and extinguisher systems for fires.

The storage room should have a window or door opening to the outside, with a large blower capable of changing the air in the entire room quickly. Acids and ammonia dispensed from carboys require a separate room having an exhaust fan. Storage room equipment includes fire doors, safety lamps, fire extinguishers, a sprinkler system, and a container of sand with a small shovel.

Store heavy items on or near the floor. Make shelves wide enough to accommodate apparatus without projections. Store glass tubing horizontally and off the floor to prevent cuts. Get shelf clamps to anchor awkward apparatus. Put wooden ridges on the front of shelves of chemicals to handle spillage. Keep chemicals which can react together dangerously, well separated. Keep volatile liquids away from heat sources, sunlight or electrical switches. Store glass bottles of flammable liquids, hydrogen peroxide and similar materials in metal or stoneware containers large enough to hold the entire volume in case of breakage. Keep storeroom aisles clear and well lit. Gas cylinders should be capped and rigid, away from heat sources. Exits and ventilation points should be clearly marked. Store no waste—have disposal facilities.

In handling materials out of the storage room, carboy inclinators and casters should be standard equipment. Use tilters on smaller bottles. The use of rubber gloves, aprons and cup goggles should be made mandatory. Under tapped drums, mounted

Safety visors shield the eyes during a momentary danger and can be lifted over the forehead when desired. Note tongs.

The protection frequently required in laboratories is provided by these shatter-proof plastic goggles that can be worn over eyeglasses.

A mesh shield protects this worker against collapse of a vacuum desiccator.

For protection against flying particles and spattering chemicals, this safety shield is placed between the technician and the apparatus.

horizontally and braced, place small, sandfilled metal boxes to catch drippings. Use faucets with spring closing action and locking pins. Have a container of soda ash or baking soda on hand during acid pouring. Carry flammable liquids in safety cans.

Label all containers before filling and never fill one with material other than that called for by the label.

Use a trussed handcart for transporting gas cylinders and never move two together unless they are banded together properly. Never roll, bounce or otherwise jostle cylinders. Chlorine or hydrogen sulfide cylinders require more than one person. Use a safety cylinder support to prevent toppling after positioning for use. Allow only trained personnel to handle gas and chemical stocks. Demand full information from the manufacturer on the handling of new substances.

The human element enters a discussion of lab hazards in the role of faulty techniques. Much grief can be avoided with proper initial personnel training by the department head: correct apparatus assembly, materials handling, acid-mixing, glass tube cutting and work with sharp thistle tubes. Because acids offer poisoning, burning and gassing hazards correct handling is most important. Teach technicians to always flush the outside of acid bottles before opening. Have them lay stoppers where no one can possibly rest his hand or arm. Stopper bottles tightly and flush after use, being sure they are dry before placing back on shelves. Clean spillage, carefully. Hang up this sign: Pour Acids into Water—Never Pour Water into Acid.

Provide tongs, cloths, or spoons for the handling of dry ice, liquid gases and freezing mixtures. For hot handling similar precautions are necessary. Make it an automatic procedure to check glassware for flaws, all mounts and connections, *before* use.

A few "don'ts" for electric exposures:

Don't use worn, threadbare wires —use rubber cable, wiped dry.

Don't use a motor wet by spillage. Allow ample drying time.

Don't handle electrical connections with wet hands or when standing in or near water.

Don't lay extension wires on bench tops or across metal fixtures.

Don't move, adjust or inspect electrical apparatus while plugged in.

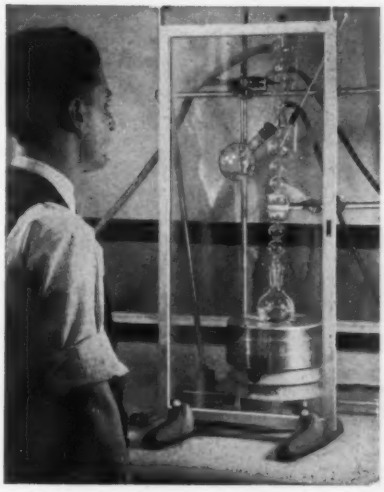
Don't let your body become part of an electric circuit by working on lines with both hands.

Don't use exposed "knife" switches.

Don't do your own permanent wiring—call in the electrician.

Incidental burns, along with minor cuts and scratches, are the most prevalent of all injuries resulting from laboratory accidents. They don't have to be. Teach workers to wear aprons and gloves, use tongs, flush off acid and caustic spatterings quickly. Have a sink within easy reach of every worker. Goggles are a must in lab work, especially around chemicals, ultra-violet and infra-red light.

Daily exposure to even small amounts of toxic fumes can have a dangerous cumulative effect. Use local exhaust systems in preference to unit ventilation. Sample air in rooms adjacent to labs to guard against escaping fumes. Check blower motors and fan blades for defective parts. Work with toxic gases requires specific gas masks.



A safety pipette filler is the only safe way to draw off small quantities.

"Where There's Smoke--" THERE MAY BE *Cancer*

By RICHARD G. BERGER, Research Chemist,
Bridgeport, Conn.

The findings of experimenters in thousands of research projects using animals indicate convincingly that the most common, most abundant, and most potent cancer-causing substances with which most of us make daily contact are coal tar, other combustible tars, and their component compounds. These substances are among the chief constituents of smoke, soot, and the other products which result from incomplete burning. Here is an article to make you think.

A COMPREHENSIVE list of numerous tests which have been made for cancer-causing properties and the results of these experiments are included in "Survey of Compounds Which Have Been Tested for Carcinogenic Activity," by Jonathan L. Hartwell, National Cancer Institute, U. S. Public Health Service. In this survey we find that most of the hundreds of compounds with active cancer-causing properties are coal tar products, their derivatives, or similar substances.

Tars and tarry products are the most virulent of all materials which have been tested in the search for and comparison of carinogenic agents. Occupational cancers are frequently called "tar cancers" and are contracted by workers in occupations pertaining largely to soft coal distilation products, such as coal tar, coal tar pitch, and manufactured coal gas. To a more limited extent they occur also in industries associated with petroleum oils and Schottish shale oil.

Occupational Cancers

Occupational cancers generally occur after many years of repeated exposure to the tarry products in the portions of the body most exposed, such as the face, the hands, and the lungs, and frequently are recognized from 10 to 40 years after termination of the occupation in which the known cancer-causing contacts have been made.

The logical inference is that delayed effects occur after repeated infinitesimal accretions of irritating substances and may be first visible long after the inciting cause has disappeared. We should be intensely interested in the characteristics of occupational cancers because they appear to give us convincing evidence regarding the probable common causes of other cancers. No doubt all of us inhale tars of known carcinogenic polity. We eat them with our food, and we receive their deposits on our skin.

Mr. Berger

It has been found that cancer is generally unknown in the tropics where people eat more raw foods and have little use for coal, oil, or other fuels either for cooking or heating.

Some people are much more susceptible to cancer than others, so that in some cases even children are victims of this dread disease. In this respect people are like white mice, some strains of which contract cancer through contacts with irritants easily and quickly, whereas other strains are very resistant. Under the same conditions people in some families get cancer while others do not.

Those parts of the human body which have been weakened by injury appear to be the most vulnerable. Because of the control of other diseases, more people now live to those ages, forty years and upwards, in which cancer is most frequent. At the present time in the United States the average time required to get malignant cancer by those who are succeptible enough to get it is about sixty years.

Contamination of the atmosphere with soot is by far the most prominent source of tar particules in the air. The quantity of tar contained in the dust from tarred roads and from the exhaust fumes of gasoline engines has been found by investigators to be negligible in comparison to the quantity of tar included in the soot released into the air with smoke. Also, the death rates from lung cancer in large cities are consistently and noticeably higher than those of rural communities. The causes of cancer are probably some or all of the cancer-causing substances with which the victims make contact during their lifetime. There is reason to believe that not only persons who smoke but also those who breathe air contaminated with tobacco smoke over prolonged periods show an excessive liability to lung cancer. It was estimated that in ten years the average cigarette smoker may take into his or her body more than eight quarts of carcinogenic tar. It is quite possible, however, that cancer-causing tars can be removed from tobacco smoking so that smokers may enjoy this pleasure without injury.

Other Sources

Besides the incomplete burning of fuels and tobacco smoking, there are other sources of carcinogenic contacts, such as arsenic compounds. The dye industry—which is based on coal tar products—is reported to have a considerable number of products on the market which possess cancer-causing qualities. I am convinced that most cancer is due to the cumulative effects of contacts with various cancer-causing irritants formed by incomplete burning. Inasmuch as it is impossible to get absolutely complete burning of the usual fuels used for cooking, heating and industrial purposes—that is, coals, manufactured gases, oils and woods—I believe we should limit and curtail their use sufficiently to keep the sum total of our contacts with cancer-causing irritants below the danger points to be determined by future research.

My own version of the old saying, "Where there's smoke, there's fire" becomes "Where there's smoke, beware; cancer's cause may be there."

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Plastic Goggles
WITH REPLACEABLE LENSES

These new but *proved-in-practice* safety goggles offer clear wide-angle vision, safety, lightweight comfort and handsome design *combined.* They are favored by many because they may be worn either with personal glasses or without. The plastic lenses are easily *replaceable*; frames follow forehead and facial contours faithfully. Eyecups provide eye security with adequate ventilation to minimize fogging from lenses. The bridge will accommodate any nose with comfort. Clear or green acetate frames and lenses. No. 600 AO Panoram Plastic Safety Goggles provide ideal protection against hazards met with in babbitting, chipping, grinding, hand tool and machine work, riveting, rail and rivet cutting and spike driving. Send to your nearest AO Representative for descriptive bulletin.

Safety Division

American Optical COMPANY

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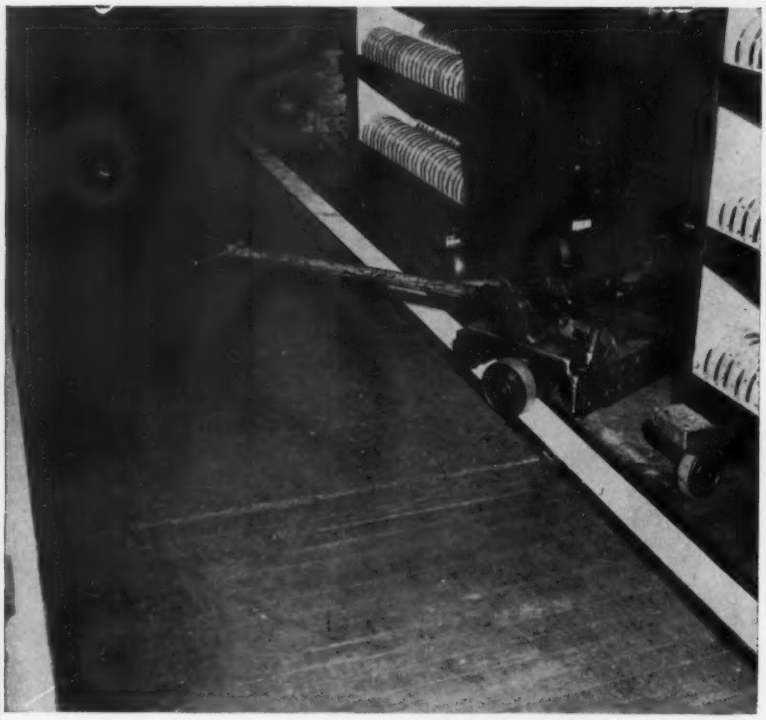


THERE'S A *Safer Way*

Safety Illustrated

NUMBER 10

Here are new pictures for your photographic safety manual. Clip and save.

•

Despite the good floor marking shown here to direct shop traffic, flow, limit storage and provide machine spacing, there's little need for a second guess that the next employee who happens along may trip over the protruding truck handle in the aisle. Orderly parking of industrial vehicles is all important in helping reduce tripping accidents which often result needlessly, due to carelessness and lack of forethought on the part of production workers.

•

An extra moment's thought to remove this vehicle blocking a fire control door will save life and property in the event of a fire. Right now, there's no opportunity for protection here because if a fire started this door wouldn't close and the fire could spread to other parts of the building. Workers who leave vehicles carelessly in door ways and aisles should be constantly briefed on good housekeeping and fire prevention rules pertaining to keeping doorways and aisles clear.

•

(Courtesy Leeds & Northrup Co.)

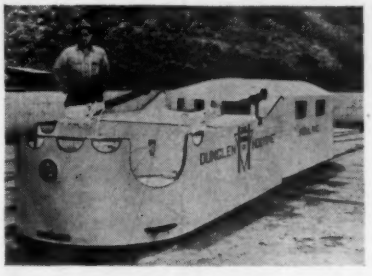
MEN AND MATTERS

News • Activities • Plans

FOAM MAKES MOVIE SNOW . . . A pattern of Pyrene Manufacturing Company's fire-fighting foam laid on the ground looks exactly like a snow bank, and Frank Capra, famous movie director, got an idea. Noted for impressive natural effects in his productions, Capra carried out his

idea in his recent success, "It's a Wonderful Life," starring James Stewart. Much snow falls in the picture, all of it from Pyrene foam playpipes. Cornflakes heretofore have been used in the movies to make a snowfall. Hollywood reports that the new type "snow" is lasting, odorless, and harmless to scenery and clothing, an improvement even over the natural variety.

MINE AMBULANCE . . A number of major improvements in equipment have been made during the past year at mines of the Pittsburgh Consolidation Coal Company with the sole purpose of increasing safety. Numbered among these are enclosed man-trip cars, underground ambulances, improved sanitary wash



houses, new portals and better ventilating equipment.

Unique among the new equipment is a motorized underground ambulance, pictured above, equipped with safety top, heating devices and the latest in first-aid supplies. The motor section is a permanent, integral part of the unit, making the ambulance available for immediate call.

BUREAU APPOINTMENT . . . Dr. E. U. Condon, Director of the National Bureau of Standards has announced the appointment of Mr. Donald I. Graham, Jr., as Safety Director of the Bureau, and Chief of the Safety Section. Mr. Graham comes to the Bureau from the Safety and Security Division of the Office of the Chief of Ordnance, War Department.

As Chief of the Safety Section, Mr. Graham will be responsible for safety and accident prevention pro-

Mr. Graham

grams, inspections to insure compliance with safety orders, and initiation of new measures and safety policies in laboratories and plants.

Mr. Graham is a member of the American Society of Safety Engineers, the National Fire Protection Association, and the American Society of Civil Engineers.

FIRE-FIGHTING SUIT . . . To speed release of Army flyers who may be trapped in the burning wreckage of a plane, the Army Air Forces and the Quartermaster Corps of Engineers, have developed a new type of fire-fighting clothing to be worn by rescue personnel as protection against flash burns and searing heat.

A matter of particular interest to industry, the new fire-fighting clothing, according to the AAF, protects the entire surface of the body, permits greater freedom and visibility than the clothing formerly used, and is rapidly donned and removed.

The knee-length coat and hood have an innerlining of noncombustible Fiberglas backed by wool cloth. Outer shell of the coat is repellent cotton duck lined with a resin-coated cotton cloth. Trousers are of somewhat similar construction except for the Fiberglas. Frame of the helmet is of flameproofed fiberboard. The window is clear, heat-resistant plastic material.

FEEDING SERVICE . . . Overtime workers at the Standard Oil Company, Linden, N. J., plant receive catering service when their jobs require their time and attention during a meal hour. Nearly two thousand daily satisfy their appetites at the huge modern cafeteria under the supervision of Cafeteria Directress Ruth Weeks. The workers who are required to work overtime receive special attention with a guarantee of hot food wherever their posts may be on the vast acreage of this refinery.

For the purpose of saving time and money, as well as doing on-the-job feeding efficiently and sanitarily, all meals are served on paper. Hot refreshments and soups, salads and fresh fruits are served in sanitary paper cups while meats and vegetables are portioned on paper plates. Each meal is packed separately in paper boxes and delivered by plant guards to the individual employee at the scene of his work. The usage of

Men and Matters

paper also enables the worker to easily dispose of the container and waste.

"It is all part of a good employee relations program," points out Miss Weeks. "The in-feeding at the cafeteria and on-the-job meals are doubtless contributing factors to the high morale of employees here."

NON-FLAMMABLE SOLVENTS . . . Detrex Corporation through W. W. Davidson, vice president in charge of sales, announces a new source of supply for its Perma-a-chlor and Triad metal degreasing solvents. The company's new chemical manufacturing plant, located on the West Coast, is channeling its entire output of non-flammable, stabilized, chlorinated hydrocarbons used for high speed cleaning purposes to supply Western industries.

Offices and warehouses distributing these solvents are located in Los Angeles and San Francisco, California, Portland, Oregon and Seattle, Washington, under the management of S. B. Crooks. A staff of competent, experienced field representatives is maintained for consultation and service on any cleaning problem.

AWARD WINNER . . . The American Optical Company, Southbridge, Mass., was acclaimed 1946 winner of the Grand Trophy offered each year by the Associated Industries of Massachusetts to companies making the best record in accident reduction in the state-wide Industrial Safety Contest, conducted by the Massachusetts Safety Council. AO worked 10,596,302 man-hours of injury exposure during the year, scoring the greatest improvement in frequency and severity rates.

ACCIDENT SURVEY . . . A category in the construction field hitherto unlabeled is christened "surface construction" by the authors of *Surface Construction Without Accidents*, an 84-page book published recently by American Mutual Liability Insurance Company, Boston 16, Massachusetts, and available upon inquiry. The new term is applicable to jobs ranging from the entire construction of a highway on a new cross-country right-of-way to the grading and surfacing of an airport. By definition it includes streets, roads, runways, parking areas and similar projects where earth-moving, paving and related operations are principally involved.

FOR SUPERVISORS . . . *"Management Techniques for Foremen"* by Richard W. Wetherill (published by National Foremen's Institute, Inc.,) is an attractively bound 177-page, looseleaf, 8½ by 11-inch book packed with plain talk for the "middleman" between labor and management—the foreman. Presented in question and answer form, 18 sections ranging from a discussion of the responsibilities of a foreman to a survey of his advancement possibilities cover his field of operations.

Included are several sections pertinent to the foreman's role in the problems of plant safety and workers' health. These are entitled "Safety," "Working Conditions," "Training and "Co-operation." Specific questions deal with the prevention of accidents, maintenance of good housekeeping and the peculiar problems of women in industry. Order from publisher.

NEW SHOE ADS . . . Thom McAn shoes, product of the Melville Shoe Corporation, New York, will be featured in newspaper advertising prepared by John A. Cairns and Company, New York. The agency formerly handled the women's shoe division.

Here's the Handy **DAYTON "ROLL-ALONG" SAFETY LADDER**

IDEAL FOR THE STOCK ROOM

. . . The Dayton Roll-Along Safety Ladder with its rubber tired swivel casters can be speedily moved in any direction with practically no effort.

Safety shoes with renewable treads hold ladder permanently and safely in place while ladder is occupied.

Constructed of tested airplane spruce throughout and reinforced with steel braces for additional safety. Folds compactly for convenient storing. Available in sizes 3-ft., 4½-ft. and 6-ft.

Elevating auxiliary platform which folds back in main platform adds height if desired. These ladders are being used in many of America's largest plants. See for yourself! Write today for bulletin.

For Safety's Sake . . . **consult our SAFETY DEPARTMENT . . . we have the complete line of safety equipment for your every requirement.**

DAYTON SAFETY LADDER CO.

2337 GILBERT AVE., CINCINNATI 6, OHIO

For complete information, just check any or all items listed, and send us the coupon.

MAIL NOW

DAYTON SAFETY LADDER CO.,
2337 GILBERT AVE., CINCINNATI 6, OHIO

GENTLEMEN:
WITHOUT OBLIGATION ON MY PART PLEASE SEND ME FOLLOWING CHECKED BULLETINS:

.....SAFETY LADDERS SHOES	.....SAFETY GASOLINE CANS	.....SALT TABLETS & DISPENSERS
.....SAFETY LADDERS	.....OILY WASTE CANS	.....SAFETY GOGGLES
.....SAFETY CLOTHES	.....EXCELSIOR CANS	.....GLOVES
.....ROLL-ALONG LADDERS	.....WATCHMEN'S CLOCKS	.....FIRE BUCKETS
.....FIRE HOSE	.....ACID PUMPS	.....ROCK UP RACKS
.....FIRE EXTINGUISHERS	.....RESPIRATORS AND PARTS	.....PLY"
		.....EYE SHIELDS

(Name) .....
(Company) ..... (Address) .....

EYE ACCIDENTS . . . Figures from the National Society for the Prevention of Blindness reveal that 80% of all eye accidents are caused by flying particles and that 98% of all industrial eye accidents can be prevented: a sales story for the goggle-manufacturers!

Incidentally, the remaining 20% of such accidents are accounted for by five other hazards: tools or machinery, 8%; splashing liquids; 7%; explosions, 2½%; falls 2%; infections, ½%.

If previous averages hold, this year another 2,000 people will be blinded in one or both eyes—as a result of preventable accidents.

"WOMEN IN INDUSTRY" . . . Everyone interested in industrial health and hygiene will benefit from the extensive research involved in compiling the book bearing this title and authored by Anna M. Baetjer, Sc.D. The product is a remarkably complete coverage of the subject, issued under the auspices of the Division of Medical Sciences and the Division of Engineering and Industrial Research of the National Research Council. Cloth bound, the book has 344 pages. Order from W. B. Saunders Co., Philadelphia.

ACCIDENT PREVENTION TEXT . . . McGraw-Hill Book Company, New York City, has recently published as part of their Industrial Organization and Management Series, a text *"Accident Prevention Administration,"* by Frederick G. Lippert, Manager of Personnel Administration, Raytheon Manufacturing Co.

The book is prepared for consideration of those concerned with safety development, administration and success. For plant executives—superintendent, foreman, personnel manager, training director, industrial engineer and accident prevention specialist—the book provides detailed and specific guidance in each of the various functions essential to effective accident prevention, presenting steps in the organization and operation of the program.

The book may be ordered direct from the publisher.

PROMOTION . . . Mr. J. E. Moore, formerly safety director for the Corporate Service, Inc., Detroit, Mich., has been promoted to vice president in charge of engineering of the company. Mr. Moore, who is vice chairman of the Automotive and Machine Shop Safety Section, will continue to handle the company's safety department activities in addition to his new duties.

FIRE CONTROL . . . A new 24 page booklet, "Fire Control . . . Its Equipment, Personnel and Procedures," has been published by the National Conservation Bureau, accident prevention division of the Association of Casualty and Surety Executives. Compiled by a committee of engineers who are expert in fire prevention, the publication presents the correct procedures for handling emergency equipment to control fire in work places, and points out how industrial fires can be eliminated or controlled. The booklet is directed especially to plant managers and supervisors and is distributed gratis through member companies of the Association, 60 John Street, New York 7, N. Y.

"D" FOR DANGEROUS . . . DDT, that wonder insect killer, can be harmful to humans and animals according to the safety engineering department of Employers Mutuals, if care is not exercised in its use. It may also be a fire hazard.

Used on an industrial scale, most frequently in plant cafeterias and dispensaries, a few simple precautions should be followed by employees charged with applying the

Clean Cool DRINKING WATER

FOR CONSTRUCTION AND MAINTENANCE CREWS

The Dobbins PORTABLE SANITARY DRINKING FOUNTAIN protects the health and strength of workmen on any job . . . anywhere . . . with cool, clean drinking water—at the press of a button! Aids railroad, highway and building construction, repair and maintenance crews . . . miners, and all other workmen on jobs where a permanent, sanitary drinking water supply is *not* available. Banishes germ-spreading practices such as use of "common" drinking cups, open pails, dippers, etc. Four gallon capacity tank is fully insulated. Air pressure for instant flow of water is supplied with a few strokes of the pump.

DOBBINS MANUFACTURING COMPANY
DEPT. 629 ELKHART, INDIANA

PORTABLE SANITARY
MEETS REQUIREMENTS OF PUBLIC HEALTH AUTHORITIES

DISTRIBUTORS: Some territories are open for this fast-selling item. Write for complete details.

Dobbins Superbilt
PORTABLE DRINKING FOUNTAIN

FOUNTAIN AND ACCESSORIES • • AVAILABLE FOR IMMEDIATE DELIVERY

No. 18 — Dobbins Superbilt *Portable Drinking Fountain* less all accessories. Only **$16.00**
Salt Tablet Dispenser, 500 tablet capacity, extra **$2.75**
Adjustable, Waterproof *Carrying Strap*, extra **$1.15**
Spill Cup, to catch overflow when used indoors **$3.50**
Mounting Bracket, holds fountain to wall or floor of buildings, trucks, tractors, locomotives, etc. . **$4.50**

All prices F. O. B. Elkhart, Indiana. Circular on request.

insecticide or with mixing solutions. They are:

1. If the liquid is being used, wear a chemical cartridge respirator to protect your nose, throat and lungs. When using the powdered form, a standard dust respirator will do. Always take special care not to leave your breathing zone unprotected against the powder or the mist from the spray.

2. Do not allow the spray or powder to settle on food or dishes.

3. Do not smoke while spraying nor spray near a flame.

4. Getting some of the liquid on your skin may cause trouble. Remove it at once with warm water and soap.

5. READ THE LABEL. Government regulations on packaging require the label to carry all necessary precautions regarding use.

SAFETY GLASS PRODUCTION . . . Construction of a $385,000 addition to the Duplate Department at Pittsburgh Plate Glass Company's Creighton, Pa., plant is under way according to announcement by Richard B. Tucker, executive vice president of the firm.

"Despite capacity production of Duplate, a laminated safety glass, Pittsburgh Plate Glass Company has been unable to meet mounting demands of consumers, principally the automotive industry," Mr. Tucker said.

MERIT AWARD JUDGES ANNOUNCED . . . Judges for the Merit Awards and twelve $100.00 Gold Seal Awards sponsored by the 2nd International Lighting Exposition and Conference have been announced as follows: Carl Zersen, Chairman, Mgr. Chicago Lighting Institute; Marshall Waterman, Electrical Testing Laboratories, Inc.; B. J. Martin, Publisher, Electrical Industry Magazine; W. T. Stuart, Editor, Electrical Contracting; Prof. John O. Kraehenbuehl, University of Illinois.

VD PAMPHLETS . . . The United States Public Health Service has just issued three new publications to spur an effective venereal disease education program in industry. These pamphlets, entitled "Facts About Syphilis and Gonorrhea," "Wedding Plans" and "Protecting the Unborn Baby," are available at minimum cost in single or quantity orders to industrial plants from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

EYE SAFETY FOR VISITORS . . . All persons entering hazardous sections of the Blatz Brewing Company bottle house at Milwaukee, Wisconsin, are required to wear eye safety devices, whether they are employed there or just passing through. An extra supply of plano-type goggles is kept on hand in the Blatz First Aid Department for the use of visitors. For those guests who require prescription goggles there are two types of plastic shields which are worn over regular spectacles. These are loaned to visitors and then returned to the First Aid Department.

CHEMICAL SAFETY . . . The Manufacturing Chemists' Association, Washington, D. C., announces the publication of Chemical Safety Data Sheets SD-7 on ACETLYENE and SD-8 on ANHYDROUS AMMONIA, the seventh and eighth in the series of chemical product safety manuals being prepared. Designed for supervisory staffs and management, the manuals present essential information for the safe handling and use of chemical products. Prices are 15 and 20 cents respectively.

Nature provided the polar bear with thousands of bristles-on-end to give safe footing on slippery surfaces.
CORD-ON-END
GRO-CORD
YOU'RE SAFER ON
SLIPPERY SURFACES WITH
CORD-ON-END
SOLES BY
GRO-CORD
Long wearing Gro-Cord soles and heels with the original Cord-On-End construction give safer footing as long as they last. The tough tire cords are on end all the way through the soles, furnishing continuous non-skid safety. Reduce slipping hazards by specifying this quality sole on safety shoes . . . the extra wear adds economy to every pair. The Original Cord-On-End is a product of Gro-Cord Rubber Co., Lima, Ohio.
ARE YOUR SLIPS SHOWING?
TRADE GRO CORD MARK
BOTTOMS THAT ARE TOPS IN SAFETY

Right off the Docket

(Continued from Page 18)

The established law is that where an employee violates an instruction of his employer and the violation takes him out of the sphere of his employment and the injury occurs during the violation, the accident arises out of rather than in the course of employment and is not compensable. However, where the violation does not take him out of the sphere of his employment and the employee is injured during such violation, he is guilty of negligence, but his recovery under compensation act is not barred.

In the instant case, a suit was brought against the street car company which was held to be precluded and the common law action denied by reason of the fact that the injuries were compensable under the Compensation Act, there having been no deviation from the sphere of employment. The course of employment within the Compensation Act has to do with the time, place and circumstance and is a question of fact.

Cohen vs. Cummings, et al
71 N. E. Rep. 2nd series, page 198
Appellate Court of Illinois
February 5, 1947.

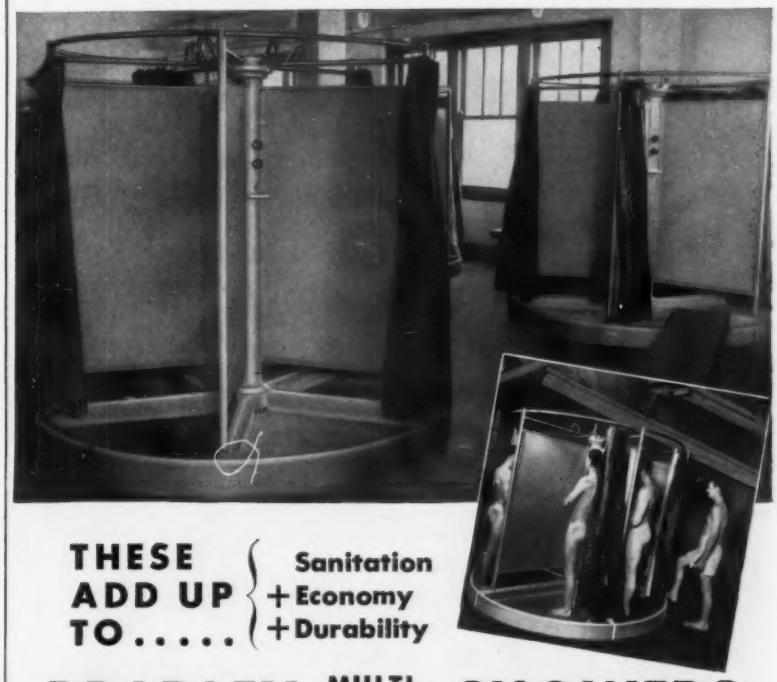
Constant Prankster Imposes an Added Peril

FRANK GREEN seeks compensation by reason of injuries received in the course of employment and by reason of an injury inflicted upon him by a co-employee named Fleetwood. On the date of the injury, Green left the Stock Department where he worked to go to the receiving department to obtain some object or article and while he was going down the aisle walking through the receiving department, he was struck in the eye by a missle thrown by Fleetwood.

Testimony of other employees indicated that Fleetwood was the "funny boy" who freely engaged in sportive acts as a matter of daily routine. The foreman and a group leader testified that they knew of some of Fleetwood's acts of horseplay and that on one occasion the foreman had censored him for it.

The company denies responsibility on the grounds that to hold it responsible would impose an unusual hardship, and contends further that an employer was not charged with a duty to see to it that none of his employees assaulted any other one of them whether willfully or sportively. This contention is the usual one in similar cases. However, in the situation herein, the records indicate acts of horseplay occurring almost daily. His plays were so notorious and widespread throughout the factory that it seems hard to believe that the company through its officers had no knowledge of the condition that existed. It was concluded that where the employer knew or should have known of the frequent horseplays intended by an employee who injured another employee, there was an added peril and the injury was compensable as an "accident arising out of and in the course of employment." Claim allowed.

Greene vs. Watson Flagg Machinery Company, Inc.
New Jersey Department of Labor, Workmen's Compensation Bureau, January 22nd, 1947
51 At. Rep. 2nd series, page 121.



THESE ADD UP TO..... Sanitation + Economy + Durability

BRADLEY MULTI-STALL SHOWERS

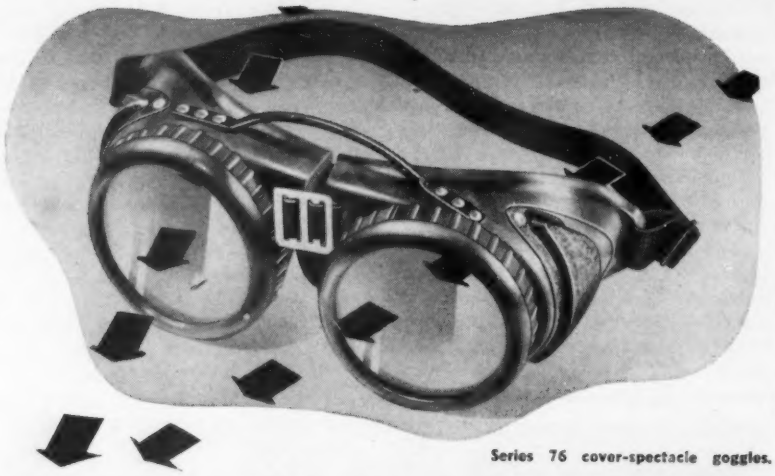
Employee wash facilities, to be complete, require some form of shower convenience. Modern educational institutions recognizing this need, have selected Bradley Multi-Stall Showers for maximum sanitation, economy of operation and long-life durability.

One Bradley 5-Stall Shower unit requires only 3 plumbing connections in comparison to 15 needed for 5 "single-stall" units. This simplified installation plus complete absence of corners and dirt-collecting pockets cuts cost of upkeep and janitor detail. Savings are also realized through lower hot water costs made possible by reduced water consumption.

For new school buildings, for expansion of present facilities or for modernizing existing buildings, Bradley 5- or 3-Stall Shower units can be installed quickly and easily on any kind of floor including wood. Distributed through plumbing wholesalers. BRADLEY WASHFOUNTAIN CO., 2259 W. Michigan Street, Milwaukee 1, Wisconsin.

BRADLEY multi-stall showers

Send today for new Illustrated Catalog 4701



Series 76 cover-spectacle goggles.

Three and a Half Ounces of *PREVENTION*

- Light weight, sturdy, molded plastic construction.
- Comfortable, well ventilated for continued wear.
- Offers maximum eye protection.
- Brace bar permits easy, one hand adjustment.
- Replaceable lenses to meet your specifications.

Write for our welding and safety equipment catalogs.

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Systematized Sanitation
means ON THE SPOT SAVINGS

In these days of rising costs, it is specially important to effect a saving wherever possible. Gerson-Stewart's simple plan of Systematized Sanitation works two ways to help reduce manufacturing and maintenance costs in your plant. Hundreds of leading concerns now save with Systematized Sanitation. Write today for complete information.

Systematized Sanitation enables your present labor to do more tasks—better!

SYSTEMATIZED G S SANITATION

The GERSON-STEWART Corp.
LISBON ROAD • CLEVELAND, OHIO

Misuse of Dangerous Instrument

MATHEW SAVAGE was operating a milling machine. The work of the machine caused an accumulation around its base of metal particles, thrown off in quantities sufficient to require attention from time to time. Disposal was effected by compressed air released from a hose which blew through an opening into a lower chamber.

Savage's machine was one of a number in the department, each having its own operator and each equipped with a compressed air hose for use in the manner above described. It was not the duty of the operator to remove the accumulation. That function was performed at all machines by one especially assigned thereto, named Brown.

It appears that on this occasion the hose was so manipulated by Brown that the air pressure was discharged near enough to the side of

Savage's head to cause a puncture of the ear drum. It was not made certain as to whether or not the happening occurred as a result of horseplay or accident. The Court, however, concluded that it was horseplay. Did it arise out of and in the course of employment?

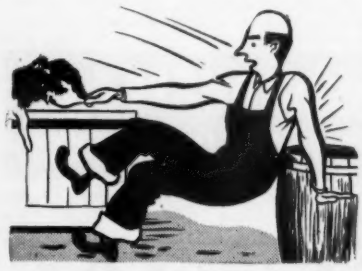
There was no question that the accident occurred where the work was to take place. The company had selected the claimant's fellow worker and allowed to be placed in his mischievous hands an instrument which was dangerous in itself. The close work done was such that injury resulting from the intentional misuse can be said to have arisen out of and in the course of employment. Therefore, the claim herein was allowed. The Court concluded that certain factories have crowded contacts and resulting injuries are not measured by the tendency of such acts to serve the master's business. Claims arising thereunder and by reason of such horseplay are construed to have arisen out of the employment.

Savage vs. Otis Elevator Company
Court of Common Pleas,
New Jersey, Hudson County
January 29, 1947
51 At. Rep. page 123.

Common Law Claim Based Upon Negligence Of Employer

THIS action was brought against the employer for a personal injury sustained by the employee, the employer not being a subscriber under the Workmen's Compensation Law. The claimant had worked for the company for more than thirty years trimming flesh off hides to prepare them for tanning.

On the day of the accident, when he went to work, he found much greased flesh around the floor and bench which had not been cleaned during the night. He complained to his foreman of the condition of the floor, but went to work being assured that the condition would be remedied. He worked for three hours before the injury. Then, in dragging a particularly heavy hide



upon the bench, his foot slipped, he lost his balance and struck himself, permanently injuring his heart through the rupture of a vein.

It was the claimant's contention that the company was negligent in failing to clean the floor and requiring him to lift an unusually heavy hide, and that the employer owed to the employee a duty to improve machinery conditions and methods that characterize the employment.

The Court concluded, however, that there was no such requirement; that since this case was filed prior to the adoption of the compulsory Compensation Act, the employee was deemed to have assumed any risk connected with his employment. It was further stated that the Workmen's Compensation Act did not enlarge the duty of the employer who was not a subscriber, nor transform into negligent conduct that which apart from the statute would impose no liability upon him. There can be no negligence where there is no duty. Therefore, the claim was denied.

Maciejewski vs. Granton & Knight Company

Supreme Judicial Court of Mass., January 8, 1947
70 N. E. 2nd. Rep. page 796.

LIGHT AS A FEATHER... TOUGH AS A TANK!

ACID, CAUSTIC and WATER RESISTANT

FLAME PROOF

IT WEIGHS 1/4 OF ITS EQUIVALENT IN RUBBER GARMENTS

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VINYLITE MIRACLE PLASTIC *Protective Clothing*

FOR INDUSTRY, SHOP, OFFICE AND HOME

APRONS, SLEEVES
OVERALLS, COATS
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JACKETS, HATS
SLACKS, LEGGINGS
JUMPERS, CAPES
LABORATORY GOWNS

Special Garments Designed on Request

Complete protection in everything from light office work to the most severe industrial jobs, PLY-GARB garments are roomy, well-tailored, long-wearing, easy to clean and low priced.

- BEATS RUBBER EVERY WAY—costs less, more resistant, one-fourth the weight, lasts four times as long.
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- FOR MEN AND WOMEN.

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NEOPRENE HOOD PALMS

Ventilated WORK GLOVES

COMFORT with *Safety*

The palms and fingers of Hood *Ventilated* Work Gloves are impregnated with tough, specially bonded Neoprene. They're bears for wear and the sturdy cotton backs are *ventilated* by thousands of natural pores which let air in to keep working hands more comfortable.

Save the working surfaces of *vital* hands in your industry from the penetrating action of rough, hard, sharp, abrasive materials. Hood's half-century of experience in making quality rubber goods assures *better* work gloves for you. ORDER FROM YOUR JOBBER NOW. PROMPT DELIVERY.

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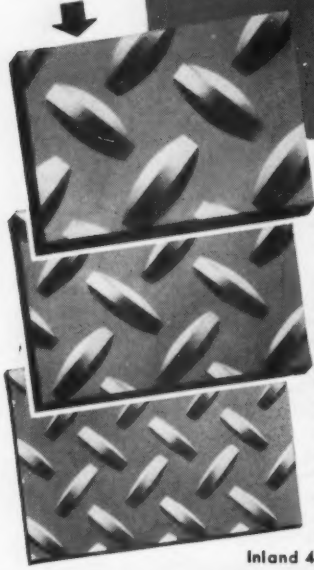
A Division of the B. F. Goodrich Company

ILLUSTRATIONS ONE-HALF SIZE

NOW! INLAND 4-WAY* FLOOR PLATE in 3 Pattern Sizes



LARGE
Gauges from three-sixteenth inch to three-quarter inch. Install it over wood or steel joists with no other support.

MEDIUM
Thicknesses from 16 gauge to one-eighth inch. For floors, steps, walkways, platforms and ramps, cleans easily—drains freely.

SMALL
Excellent safety flooring for light mobile equipment. Light weight 18 gauge only.

Available for delivery from all leading Steel Warehouse Distributors. Write for the Inland 4-Way Floor Plate Catalog.

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You need this *New Bulletin*—if you use or buy marking tools. All types of "Safety" steel stamps and dies are illustrated and described—for every marking purpose. Enables you to choose the *correct* tool for your marking application. Write today—we will gladly send the number of copies you desire.

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SAFETY STEEL STAMPS

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Efficient Work Gloves

Liquid-Tight Extra Durable

Stanzoils
of neoprene-impregnated canvas

● Their ability to stand hard wear gives you low cost per day of use. Impregnated (not merely coated) with milled type (not latex) DuPont neoprene, they are non-peeling, resist damage from oils, acids, stay liquid-tight, protect workers from costly injuries. Unusual non-slip finish assures worker confidence and speed. Made in black, comfort-fit size with curved fingers, gauntlet or knit wrist. Write for cost-saving facts now!

STANZOIL PIONEER

Synthetic Rubber Division
THE PIONEER RUBBER COMPANY
258 Tiffin Rd., Willard, Ohio, U.S.A.
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OVER 25 YEARS OF QUALITY GLOVE MAKING

PROTECTION
FOR YOUR WOMEN WORKERS

KORONET HAIR GUARDS

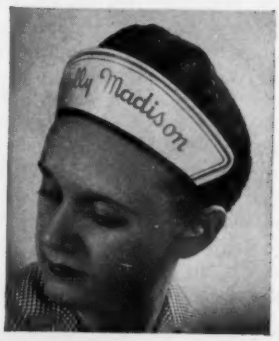
VISOR EYE SHIELD STYLE

Available once again...a pre-war favorite with post-war improvements. Preferred by all women workers. Note these features:

- Protection Against Loosened Hair Falling or Getting Caught.
- Neat, Attractive, Glossy Ethofoil Eye Shield is non-inflammable,
- Comfortably Light, fits snugly, adjustable to any head size.
- Economical . . . needs no starching or ironing . . . pays for itself in laundering savings alone.
- Sanitary . . . allows for natural air circulation.

Added Advertising Value

Any trademark, name or slogan you desire can be imprinted on the shield in color.



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TECHNICAL FILE ON INDUSTRIAL DUST HAZARDS

SAVE THIS VALUABLE REFERENCE MATERIAL: BUILD UP A PERMANENT OFFICE FILE

B127. DETERMINATION OF THE SILICOSIS HAZARD. Authoritative opinion has

1. The quantity (percentage) of free crystalline silica in the dust exposure.

2. Dimensions of the dust particles. It is the fine dust (one to three microns in size) that is most dangerous because it remains in suspension longer and is inhaled more easily.

3. The dust concentration or the quantity of dust mixture in the air. This is determined by measuring the number of dust particles per cubic feet of air, the air samples being put under a microscope in a counting chamber. In New York State a safe concentration standard has been set at 10 million particles per cubic foot when the dust is over 10% free silica; 100 million when it is less than 10% free silica.

4. The time-period of exposure to the dust—harmful results rarely being apparent in less than five years, usually requiring seven years.

5. The worker's individual susceptibility—determined by his physical endowment, his medical and economic history.

6. Miscellaneous abnormal conditions: bad working posture, high temperatures, humidity changes, etc., plus auxiliary air contaminants (gases, vapors, bacteria, etc.) breathed in during exposure to the dust hazard.

B128. EXTENT OF THE SILICOSIS HAZARD. Because of the widespread industrial use of silica, in free or compound form, silicosis is considered one of the major occupational hazards. Rarely has it been reported as a non-occupational disease. Silica dust may contaminate the air wherever ores and rocks are drilled, pulverized, processed, polished or cut, or wherever silica sand or its compounds are used in an industrial operation. Exposure is possible among such varied workers as abrasive soap and powder makers, brickmakers, buffers, burnishers, enamelers (vitreous), foundry workers, glassmakers, glass mixers, metal grinders, polishers, pottery makers, sand blasters and crushers, stone cutters and finishers, etc.

Although there is no complete data available at present on the total number of workers exposed to silicosis, general estimates of the U. S. Department of Labor place the number exposed in any way at about 20% of the total employed in the nation.

B129. DIAGNOSIS OF SILICOSIS. A worker suspected of silicosis should be required to consult a physician with a knowledge of industrial diseases—and should follow his advice. X-rays are mandatory in getting a complete diagnosis. In the opinion of many doctors, when silicosis is not complicated with tuberculosis, the worker often may return safely to his job after the dust hazard is removed or is under safe control. Pre-employment and periodic physical examinations are essential in preventing the double hazard of tissue infection and progressive fibrosis. All cases of silicosis should be brought immediately to the attention of the state department of labor for the protection of other workers.

Although in a diagnosis silica can be shown in the urine and sputum, these findings are of little value, since silica in the sputum merely confirms the exposure, not the disease, while silica in the urine may be due both to exposure and to diet. The most reliable procedure is X-ray of the lungs.

B130. SILICOSIS TREATMENT. If simple silicosis is found in the suspected worker, there is no treatment that will eliminate the fibrosis. In the very early stages a change to non-dusty work may stop the progression, or supervised inhalation of aluminum powder may help. For later stages the silicotic should build up his general health and try to avoid colds and other respiratory infections. When tuberculosis infection does set in, even if the dust hazard has been removed, the worker must leave to be treated as any other tubercular case.

B131. ASBESTOSIS CASES. Although cases of asbestosis frequently may develop much more quickly than silicosis in both symptoms and in degree, the same general plan of diagnosis and treatment should be followed. As in other fibroses, secondary infections must be guarded against.

B132. DISEASE SYMPTOMS TO LOOK FOR. Unfortunately, a worker can have an advanced silicotic condition and still feel no physical disability. Particularly is this true of the young worker, for, if the heart is in good condition in early silicosis, handicaps to lung functioning can be compensated for. Only the X-ray is an accurate guide in detection. The most common disease symptoms noted by the worker in dust hazards are shortness of breath, chest pains and dry cough. Other things to look for are an inordinate loss of strength, indigestion or other stomach discomforts, constipation, plus the blood-spitting characteristic of tubercular lesions. Where such systemic diseases as syphilis are also involved, the progression toward disability may be even more rapid and severe, and not at all in proportion to the X-ray changes noted.

B133. WORKER SUSCEPTIBILITY. Certain workers have been found more susceptible to the health hazards of dust than others. This problem has not yet been given intensive study, but records show that silicosis, for example, can be developed by one worker while his fellow workers, doing the same job in the same place, may not be affected at all, or may be affected much later, or to a lesser degree. In addition to the obvious difference of individual physical endowment or inheritance, some of the reasons for this situation lie in the past economic history of the worker (good, average or poor family), in the personal habits (sleep, extra-curricular activities, recreation, alcoholism, etc.), in previous or current history of illness, and in exposures caused by past occupations.

JUNE, 1947

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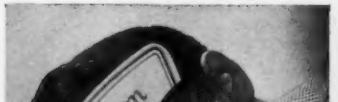


ON AVE.
LLINOIS

TECHNICAL FILE ON INDUSTRIAL DUST HAZARDS

SAVE THIS VALUABLE REFERENCE MATERIAL: BUILD UP A PERMANENT OFFICE FILE

B134. LOWERED RESISTANCE. Records indicate that all childhood diseases, except possibly diphtheria and scarlet fever, lower resistance to silicosis and tuberculosis. Further, workers who have had malaria are particularly susceptible to these two diseases, as are employees who have had bronchitis, pleurisy and asthma. Tonsillitis is associated only with a lowered resistance to tuberculosis. Nasal obstructions, chronic catarrh, enlarged adenoids, or any condition causing mouth breathing, generally adds dangers to the dust hazard.

B135. DUST ALLERGIES. When workers with dormant allergic tendencies toward a particular dust have continuous or recurring employment exposures to that dust, they may develop skin eruptions, or asthmatic attacks, as for example, from fur dust or horse dander. If the exposure is to dust containing plant pollen, etc., the result may be hay fever. In extreme hypersensitivities, even intestinal disturbances are possible. An over-sensitive worker may not know of his reaction for the first week, month, or even year, but once he becomes sensitized to a specific organic dust, any further contact with that dust (and possibly others, as well) tends to produce immediate allergic responses.

B136. IMMUNITY. The possibility of a development of immunity is remote. It usually is safe to assume that sensitivity to dust is progressive and the susceptible worker should be induced to seek other employment.

B137. METAL DUST HAZARDS. The most common complaint peculiar to workers inhaling dusts of metal origin, such as zinc oxide, is metal fume fever. This consists of a transient, systemic disorder identified by chills or "shakes" followed by a fever that resembles malaria, but which usually subsides within 24 hours. The following day the victim generally can return to work. It is thought that the fever is brought on more quickly by slow, deep breathing that carries the dust farther into the lungs. At this point the cells are killed and excess protein is released from them into the blood. The offending dust usually is a heavy concentration of lead, freshly made zinc oxide, magnesium oxide, copper oxide, manganese oxide, or virtually any of the metallic oxides.

B138. SPECIAL FOUNDRY HAZARDS. Dust hazards peculiar to foundry operations include concentrations produced by sand conditioning, shake-out processes and cleaning operations. Skillful engineering of dust control methods is required to remove the hazards. Prevalence of respiratory diseases reported among foundry workers is thought due to changing temperature conditions, radiated heat excesses, high humidity, drafts, etc., in addition to the dust exposure. Considerable danger also lies in the escape of gases around furnaces, most of which release toxic gases in moderate concentrations.

In brass foundries there is an additional danger due to the inhalation of zinc oxide, which causes "brass foundrymen's ague"—a type of metal fume fever. These intermittent fevers and chills are preceded by a stiffness in the back and arms, dull headaches, metallic taste, thirst, irritation of the eyes and throat, and much coughing. In general, the effects tend to pass off in a day or two.

B139. CEMENT DUSTS. Health hazards produced by cement dust exposures exclude silicosis but do include the following:

1. Irritation of the respiratory tract from inhaling the dry dust, causing some susceptibility to such diseases as colds, bronchitis, grippe, asthma and pneumonia.

2. Cement "burn" (dermatitis). Cement dust acts both as a mechanical irritant (especially where clothing rubs the skin) and as a chemical irritant. Direct contact with the dust acts with water or excessive sweat to produce a caustic. Frequent washing off of the dust also dissolves the top skin layers. Gloves and protective creams are essential.

3. Eye inflammation (conjunctivitis). In this case the dust usually is brought into concentrated contact with the eyes, often by a worker who uses dirty hands to rub his eyes or wipe perspiration from his face. Use of goggles should be enforced and education against contact emphasized. Boric acid solution should always be on hand in the First Aid Room for use at the first sign of irritation. All major eye disorders should be treated by a doctor.

4. Ear trouble. When personal hygiene is neglected, cement dust and ear wax accumulate to such an extent as to cause partial deafness. This clogging should be removed antiseptically by a doctor or trained nurse.

5. Rheumatism, neuritis and arthritis. These ailments are caused not by the dry dust, but by working in wet or damp environments where a perspiring body is subject to chilling. In such cases, cleanliness and regular changes to clean, dry clothing are essential for cement workers.

B140. GRAIN DUSTS. "Grain fever" is a transient attack of chills and fever similar to the metal fume fever attacks in metal workers and is prevalent among grain workers in the Great Lakes ports. The fever is thought to be the reaction of the body to a high foreign-protein content and is caused by inhaling grain dust particles (organic-type dust). Symptoms are similar to those of grippe. The fever usually occurs about two or three hours after quitting time and is generally gone by the next day. Workers get an attack most frequently at the beginning of the season, or after layoffs, or following exposure to a very high dust concentration of some grain.

Grain workers in general encounter no silicosis hazards, as there is very little free silica mixed with the grain dust. However, studies have revealed that they are highly susceptible as a group to eye irritations, and to respiratory troubles such as colds, bronchitis, asthma, and pneumonia when goggles, respirators, etc., are not used. Similar conditions exist among farm workers who are subject to "thresher's fever," and tobacco workers ssceptible to "tobaccosis," names describing reactions of a related nature.

(To be continued)

Horseshoes . . . Baseball . . . Fishing . . . Checkers . . . Hobbies . . . Riding Clubs . . . Crafts . . .

Recreation Programs IN THE SMALL PLANTS

Picnics . . . Dances . . . Concerts . . . Movies . . . Dramatics . . . Singing Clubs . . . Skating . . . Golf . . .

The problem of organizing recreation programs for small plants is wholly different and more complex than for large plants.

By C. E. BREWER

RECREATION for employees in small plants is fully as important as it is for employees in larger plants. Proof of this is the fact that today fully 50 per cent of all industrial workers are employed in plants with fewer than 500 employees.

Although employees in smaller plants enjoy the same forms of recreation as are organized in larger plants, there are usually not enough employees interested in certain activities to justify organizing those activities on an individual plan basis.

Further, the cost of organizing recreation along the lines which have been successfully developed for large plants would undoubtedly be prohibitive and would involve some unnecessary expenditures.

Local Facilities

It is important therefore that a careful study be made of local neighborhood and community opportunities for recreation already available to workers. It must be remembered that workers generally are members of a church, of a fraternal order, or of a union, and above all that most of them are members of a family and will want to have much of their recreation with their family, with other members of their church, their club, their fraternal order, their union. The small plant program should supplement community opportunities and not compete with them.

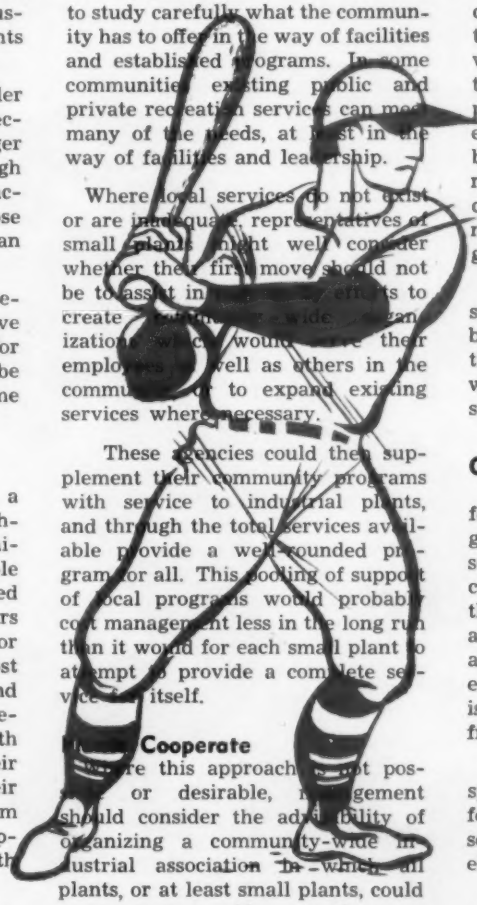
There are some activities in which employees like to participate with fellow employees in the small plant, such as bowling, picnics, and plant competitive sports.

Small plants could well develop at least one choral group, glee club, orchestra, dramatic organization, and numerous informal and social activities such as picnics, horseshoe pitching, parties, dances, stags, and such noon-hour activities as chess, checker and horseshoe games and dancing. Art, craft and hobby groups are also possible in a small plant where there is effective volunteer leadership available to stimulate and guide such groups.

The best procedure for a plant with a small number of workers is to study carefully what the community has to offer in the way of facilities and established programs. In some communities existing public and private recreation services can meet many of the needs, at least in the way of facilities and leadership.

Where local services do not exist or are inadequate, representatives of small plants might well consider whether their first move should not be to assist in [illegible] efforts to create [illegible]-wide organizations which would serve their employees as well as others in the community or to expand existing services where necessary.

These agencies could then supplement their community programs with service to industrial plants, and through the total services available provide a well-rounded program for all. This pooling of support of local programs would probably cost management less in the long run than it would for each small plant to attempt to provide a complete service of itself.



[illegible] Cooperate

[illegible]re this approach is not possible or desirable, management should consider the advisability of organizing a community-wide industrial association in which all plants, or at least small plants, could cooperate to provide recreation programs for their workers. This community-wide agency could provide leadership and stimulation for intraplant activities as well as a broad range of interplant programs.

Where community interest is lacking, or where other small plants decline to join in a cooperative program, there are a number of things which a plant can do for itself. The first step is to determine just what the recreational interests of the employees are, usually by means of an interest-finding questionnaire.

It is inadvisable to start a new program with a large number of activities. Greater success will be attained by beginning with a few activities and enlarging the program as rapidly as new ones can be absorbed.

The difference between men and women in physical ability and recreation tastes makes it necessary to develop special activities for the women. Most women are not interested particularly in strictly competitive physical activities. However, they do like to play tennis, badminton or golf, to skate, join a rifle team, ride horseback, sing in a choral group, participate in dramatics, or play in a musical organization.

Off-shift workers should be considered too, and every effort should be made to have community facilities available at odd hours for them where this can be done under proper supervision and control.

Organization

Usually the simplest and most effective form of organization is a general council on which are represented the chairmen of individual committees, who are responsible for the conduct of different activities, as well as representatives of management and labor. This council can elect its own officers. The treasurer is bonded and usually is selected from the plant auditor's office.

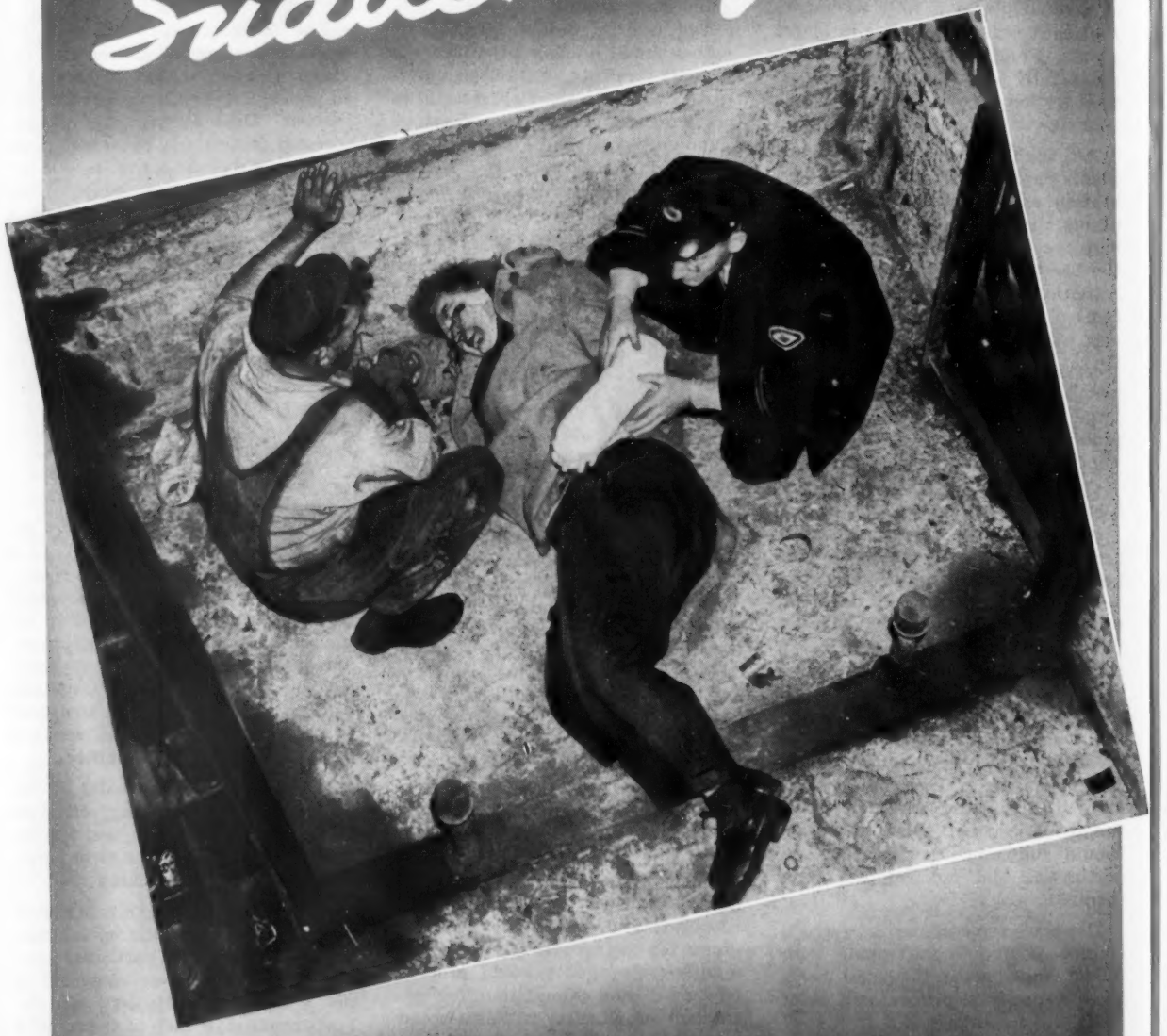
This over-all board would be responsible for stimulating activities, for establishing policies, and for the scheduling of all events in order to eliminate conflicts in dates.

Another form of organization used in some plants is the club plan. Those interested in a particular activity form a club for development of that activity, with its own officers. The president of each of these clubs then becomes a member of a plant-wide recreational council.

Outdoor areas can often be secured without cost. Where emphasis is not placed on interplant competition, the cost of athletic equipment can be kept comparatively low. Aside from any amount paid for executive leadership, $3.00 or less per employee should provide an adequate budget.

(To be continued)

. . . And Sudden Injury



You're looking down a freight elevator shaft at a West Coast plant. That's the way a body looks at the bottom, following a fall through an open gate. There's nothing yielding about the concrete down there. It's the body that gives.

And Sudden Injury

THE photograph has caught the woman worker—yes, it's a woman—with blood streaming from a head injury. She's still alive and she's getting first aid preparatory to removal to a hospital—that's where they can find out how bad she's really hurt. It was her first day on the job. It might have been her last.

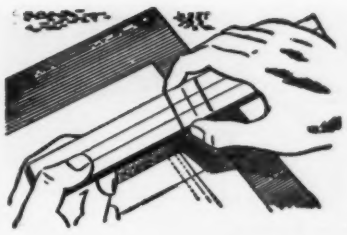
She was happy to get the job. They told her to report the next day in work clothes. It meant a big help for her family, she thought to herself—new clothes, some better furniture—they could step out a little. The personnel manager may have wondered at the "Mrs." in front of her name on the application. But she looked like a good husky addition to the plant crew and she could do the work. He told her when and where to come in. He didn't tell her she might have to be careful.

Her lunch was tucked under her arm in a business-like manner as she opened the front door of the plant next day. If you look close, you can see the package in the upper left hand corner of the elevator shaft. She never got a chance to spread it out at dinner time as she had planned she would. She had packed a good substantial sandwich and some fruit and cake. She wanted to make sure she wouldn't go hungry, her first day. She didn't. The hospital took care of that.

It was rather dark inside the front door of the shop as she closed it after her. She took a few steps while her eyes were getting used to the dimness. She remembered there was a short corridor. She didn't see the gate up over what looked like a stairway. One more step and she shrieked. She was falling. She never knew what happened when she hit the basement, one floor below.

Open freight elevator shafts are an old story in industry. Freight elevators are not always busy enough to warrant a full-time operator who can watch the gates. Besides, the operators themselves sometimes prop the gates higher to permit passage of bulky materials. Or the gate sticks as the elevator ascends. Or workers lift the gate to see where the elevator is. There may be a score of reasons for gates being up.

It's the safety man's job to wipe out such possibilities. The danger needs no embellishment. Frequently, it takes a death or bad injury to bring elevator gate carelessness to management's attention. Don't wait for that. Provide a mechanical interlocking or power device to prevent any gate opening unless the car is actually on the landing. Manual propping of gates should be met with summary dismissal. It's as serious as that.



Take another look at the picture. It's something you don't want to see when you look down any elevator shaft in your own plant.

(An authentic account taken from OCCUPATIONAL HAZARDS files.)

For further information on any of these products, simply list the key number at the foot of each item on the special post card enclosed with this issue.

New PRODUCTS

FIRE EXTINGUISHERS—The General Detroit Corp., and the General Pacific Corp., announce two new additions to their line of carbon dioxide fire extinguishers. These new extinguishers, a 5-lb. and a 2½-lb. size, replace the 4 lb. and 2 lb. CD-Sno Fog carbon dioxide extinguishers respectively.

NP 121

PLASTIC FLASHLIGHT—Gits Molding Corp., Chicago, announces the Gits unbreakable plastic flashlight. This non-conductor model, built to light under water, is equipped with spring steel belt-clip and positive type switch. Called the Super Right Angle Model No. 122 it contains two cells and is pre-focused with reflector for three-way signalling.

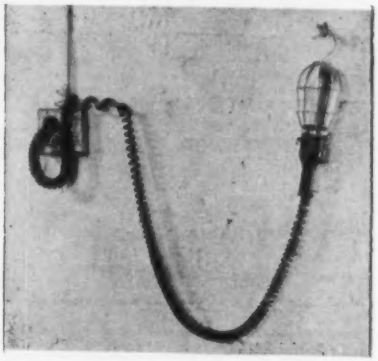
NP 122

DEMAND WORK MASK—Mine-Safety Appliances Company, Pittsburgh, announces the M. S. A. Demand Work Mask which is claimed to provide respiratory protection for routine or emergency maintenance or repair work in areas made hazardous by toxic gases or oxygen deficiency.

The Demand Work Mask is a two-fold assembly consisting of a portable, self-contained breathing apparatus with a small cylinder of oxygen or certified pure air carried on the wearer's back and, in addition, a means of utilizing oxygen from a large stationary cylinder through the necessary connecting hose and regulators. The portable cylinder contains enough oxygen for approximately 10 minutes, while the stationary cylinder has a service life of several hours.

NP 123

RECOILO - LITE—The Kellogg Switchboard & Supply Company, Chicago, Koiled Kord Division, announces production of a new application for Koiled Kords, the Recoilo-Lite. Recoilo-Lite extends from 43 inches to to 25 feet and was developed by Kellogg electrical engineers to eliminate troublesome ways in which the old "straight" cord trouble lights become out of order. Jacketed in neoprene and claimed to be impervious to steam, water, oil, grease



and most acids, the Recoilo-Lite is moveable to any outlet and adjustable to any length by means of a safety clamp which also guards against accidental pulling from the socket.

NP 124

CO-TWO HOSE REEL—A new and improved lightweight hose reel of the shock-proof type for carbon dioxide systems, available in capacities from 50 to 200 pounds or more of carbide dioxide, has been announced by the CO-Two Fire Equipment Company, Newark, N. J.

This stamped brass and chrome plated hose reel may be fitted with one-half inch high pressure hose of any length up to 125 feet or any length up to 100 feet of three-quarter inch hose.

NP 125

GOGGLE CLEANING STATION—A hardwood cabinet goggle-cleaning station which can be attached to the wall at strategic locations throughout plants is announced by American Optical Company, Southbridge, Mass. As a constant reminder for workers to keep their goggles clean, the new lens cleaning cabinet reduces the possibility of accidents or spoiled work caused by blurred vision. Lacquered in safety green the cabinet is 13" long, 9" high and 6" deep.

NP 126

(Continued on Page 48)

At the *TOP* of every *SAFETY PROGRAM*

No. 120 "Hollywood Turban"

Hair protection for women workers should be at the *top* of *your* safety program. End dangers to unprotected hair with HOLLYWOOD TURBANS. Women actually *like* to wear them. Adjustable to any head size. Fit snugly. Washable, need no ironing. Fine mesh cotton netting.

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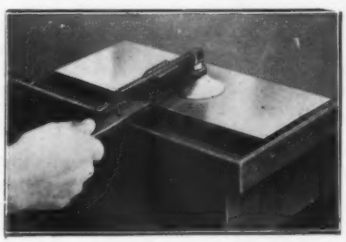

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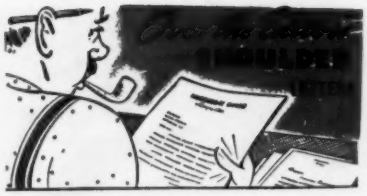

Burn Poster

OCCUPATIONAL HAZARDS:

We have noticed in your March 1947 issue a picture of a badly burned man with an attendant story. Some of our employees are engaged in handling acetylene torches around coal dust, kerosene, gasolene, and other inflammable substances. We would like to distribute some posters to our employees cautioning them about handling of such materials, and would like to include a copy of the picture to make the posters more forceful. Would you please inform us whether it would be possible for us to use this picture?—R. H. Nicholas, Director of Safety, Pittsburgh Coal Co., Library, Pa.

You have our permission to reproduce this picture and use it on any safety posters in your plant.—Ed.

"And Sudden Injury"

OCCUPATIONAL HAZARDS:

While reading the article "And Sudden Injury" on page 30 of the January issue of OCCUPATIONAL HAZARDS, I wondered if this were the method used in trying to resuscitate the electrician. The thought occurred to me that if the Schafer Prone Pressure Method of Artificial Respiration had been used he might be living today.—R. F. Simpson, 118 W. Morrell St., Jackson, Mich.

You are right in stating that the Schafer prone pressure method of artificial respiration should not be neglected. However, we endeavored to show resuscitators being used by professionals in this picture. We believe the majority of people still agree that the Schafer method is used dependably in non-professional hands.—Ed.

Good Work

OCCUPATIONAL HAZARDS:

The outstanding feature of your magazine is its readability of the short concise articles on present day safety interest. " . . . And Sudden Injury" feature picture really stops 'em and your treatment of fire hazards and prevention is real up to the minute stuff. Keep up your good work.—E. G. Turner, Fire Chief and Safety Inspector, Goodyear Tire & Rubber Company of Canada, Ltd., New Toronto, Ontario.

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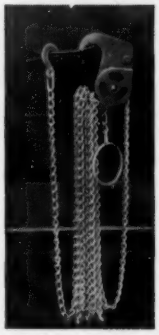

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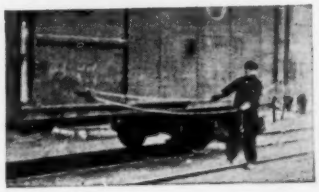


Non-Skid Soles

OCCUPATIONAL HAZARDS:

On page 33 in the February issue of "OCCUPATIONAL HAZARDS" you publish an article referring to Non-Skid Shoe Soles manufactured by Fellman, Ltd. We are very much interested in something of this sort and wonder if you can furnish us with the address of this company?—E. F. Stevens, Maintenance Supervisor, Kraft Foods Company, Chicago 9, Ill.

Power Press Safety

OCCUPATIONAL HAZARDS:

I would appreciate receiving more detailed information regarding the punch press guards pictured on page 16, February issue "OCCUPATIONAL HAZARDS."—M. G. Gallup, Assistant Personnel Director, John Wood Manufacturing Company, Inc. Muskegon, Mich.

Wetting Agents

OCCUPATIONAL HAZARDS:

Are copies of your report on "Wetting Agents in Extinguishers" available? If so, would you please send one.—H. E. Corman, Chief Chemist, Canada Packers Ltd., Toronto, Canada.

All requests have been attended to.—Ed.

FIRE PROTECTION FOR INDUSTRY

A SECTION IN WHICH ARE PRESENTED THE VARIED SPECIALIZED PROBLEMS AND SOLUTIONS TO FIRE FIGHTING CONTROL AND PROTECTION IN INDUSTRY

First Aid Fire Appliances Guide: Dry Compound Extinguishers 40
Controlling Potential Hazards In Molten Chemical Baths 41
Flammable Liquids Need Special Handling and Storage 42
Watch Those Welding Sparks! 45
The Industrial Fire Picture of the Month: Good Torch Practice 47
Catalogues, Literature and Bulletins 48
Advertisers' Index 48

CONTROLLING POTENTIAL HAZARDS IN MOLTEN CHEMICAL BATHS

Metal working industries using molten salt baths are confronted with a variety of fire and explosion hazards which present a challenge to persons responsible for plant safety.

EXPLOSIONS and fires result easily from careless handling of molten salt baths. These molten mixtures work at temperatures ranging from 300 F. to 2400 F., and any careless operation during metal treatment brings disastrous consequences. Fires will result from contact of the molten salts with combustible materials; explosions will result from various chemical and physical reactions. Moreover, operators are in constant danger of being badly burned from direct contact with the molten material, or of being gassed, if exposed to fumes which result from overheating of the mixture.

For maximum fire protection the metal heating equipment should be in a noncombustible room or building. The magic key to fire safety is *good housekeeping* around the salt baths. Any oil, cloth, paper or other combustible material coming into contact with molten salts will immediately burst into flames. Workers should be instructed to keep all such material away from the vicinity of salt baths. The storage of any type material in the heat treating room should be prohibited. Fires usually result when the melt escapes from its container and flows out over the floor. For this reason, buckets of dry, clean sand should be conveniently located in and around the heat treating room. Sand will confine the flow of escaped melt as nothing else will. Water thrown on the molten salt will result in an immediate explosion. It is good practice for management to invite local firemen inside the plant so they may become familiar with the location and the nature of molten salt baths in the event of an emergency.

Water coming into contact with molten salts immediately forms dangerous steam pockets which explode violently. Water may enter the bath as a "carry over" with work recently dipped in a nearby quench tank. All work that is to be dipped in the bath should first be preheated to drive out all moisture from quench tanks. The quenching tanks should be far enough removed from the molten salt baths to avoid the possibility of water splashing from them into the baths.

All overhead service pipes should be placed so that leakage into the molten salt bath is an impossibility. Good ventilation systems preclude the possibility of overhead steel structures sweating on humid days. A new coating has also been developed for industrial use to prevent sweating. Sprinklers, foam systems and hose streams normally used to fight fires are dangerous in the heat-treating room.

Air trapped in metal work which has been pushed into the molten salt bath will expand and explode. Carbonaceous material accidentally entering the bath will explode violently. This includes oil, grease, soot or dripping roof tar. When the bath consists of molten nitrates, magnesium alloys will react explosively upon contact with the bath.

When the bath is overheated an explosion can occur. This frequently happens overnight or over the weekends because of failure of heat controls and lack of direct observation. If the operating temperature of the nitrate bath exceeds the maximum limit, shut off the heat supply, remove metals being treated in the bath and get all employees to a safe location. If the heat continues to rise, prepare for an explosion. The fire department should be called and all windows should be opened to lessen the strain of the explosion on the walls of the building.

Carbon dioxide extinguishers can be used to put out fires around the bath, but a large sign should be posted, reading: "USE NO WATER —EXPLOSION DANGER!"

The operators should be trained and supervised by persons who know the operating temperatures of the mixture and the danger resulting from overheating. Instructions should be posted on large signs in the heat treatment room.

Face shields, asbestos gloves and aprons should be worn by all employees working around the molten salt bath. In the event of emergency, gas masks should be at hand for protection against oxides-of-nitrogen fumes.

Results of a nitrate bath explosion. The figure of a man shown standing in left background indicates relative size of this bath.

(National Board of Fire Underwriters Photo.)

DRY COMPOUND

(DRY CHEMICAL)

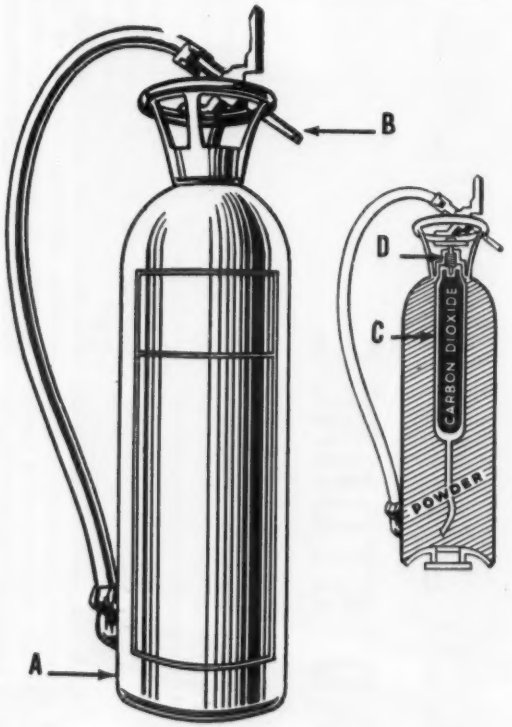
EXTINGUISHERS

(12 and 20 pounds)

WHERE adequate maintenance is provided for extinguishers, savings are effected that help accomplish the maximum of fire extinguishment in the minimum of time and cost. A careful extinguisher maintenance program should be organized. It should include periodic extinguisher unit inspections, regular scheduled recharging service. Keep records. dates and other information on the inspections, discharges, rechargings and materials used.

This handy chart summarizes the essential facts in the maintenance of DRY COMPOUND EXTINGUISHERS and furnishes a quick reference for inspection techniques. Modifications should be made of information contained herein to conform with individual manufacturers' instructions usually found on exterior of extinguisher.

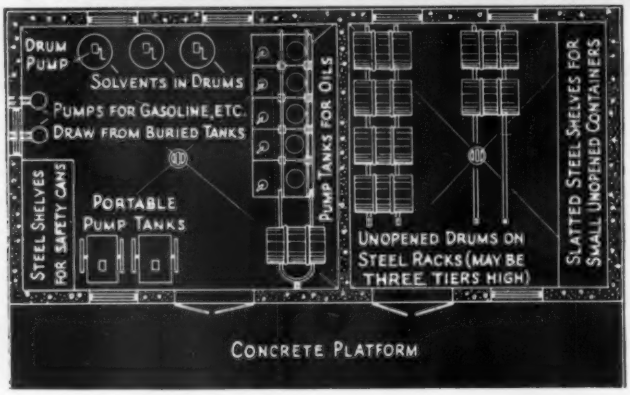
What To Check	WHAT TO DO
(A) Extinguisher Body	Examine chamber thoroughly for any signs of deterioration. Clean inside of shell for any encrustments after each inspection preparatory to recharge. Recharging should be done under capable supervision. To recharge, extinguisher body should be loaded in strict accordance with instructions on extinguisher to the designated filling mark. Specially treated bicarbonate of soda should be supplied by extinguisher manufacturer.
(B) Hose Attachment & Nozzle	Examine hose and its connections for deterioration or injuries due to misuse or corrosion. Examine hose nozzles to see that they are not clogged and to assure free running of powder. Check hose to see that it is not cut or otherwise deteriorated and that threaded connections are tight. Replace hoses and nozzles which are not in good condition.
(C) CO2 Cartridge	Cartridge should be kept fully charged at all times. On recharging CO2 cartridges, be certain that they are replaced with exact duplicates of those originally provided with extinguisher, otherwise the discharge may be impaired or extinguisher rendered inoperative. At each inspection, remove cartridge and weigh on accurate scale to detect loss of pressure by leakage. Replace with new cartridge any old one which shows a loss from original weight in excess of ½ oz. for the 12 lb. extinguisher and 1 oz. for the 20 lb. extinguisher.
(D) Hand Wheel Valve	With CO2 cartridge removed, check hand wheel valve for operable condition. Check valve plunger for secure seat. Replace with new plunger if loose or worn.



The Dry Compound Extinguisher consists of a smothering agent, which is principally a dry chemical, expelled by carbon dioxide gas. The fire extinguishing agent is a dry powdered form of specially treated bicarbonate of soda. It is packed in the main chamber which also contains a cartridge of carbon dioxide. A turn of the extinguisher hand valve punctures the carbon dioxide cartridge, expelling a cloud of powder and gas through the nozzle in a continuous stream. Water can not be used in extinguishers of this type.

WHEN	WHY
Each Month	This type extinguisher is usually hung on hangers or set on brackets not more than 5 feet above the floor for easy accessibility. A routine check at monthly intervals will make certain that each extinguisher has not been tampered with or removed from its designated pace.
Several Times A Year	At company-prescribed intervals a general inspection should be made to detect any injuries to the extinguisher, to see that they are not empty or that the nozzle orifice is not clogged. Check for proper tagging, date and signature of last recharger to assure proper record of maintenance. Check location and supply of powdered chemical and gas cartridges for on-the-spot recharging if extinguishers are found empty. Instructions to employees should be given in order that through familiarity they may become adept at handling the extinguisher in event of fire. These instructions should be supplemented with frequent demonstrations.
At Least Once A Year	At least once a year, all dry compound extinguishers and their parts should be examined for deterioration or injuries due to misuse. Particular attention should be paid to the hose nozzles to see that the orifices are not clogged and to make sure that moisture has not affected the powdered bicarbonate of soda, which must be in a free running condition. The hose must be free of all chemical obstructions. Extinguishers or parts which are not in good condition should be replaced with those which will perform with maximum efficiency. It is important that the CO2 cartridges be weighed to detect loss of pressure by leakage and replaced with new cartridges if found substandard. At these annual inspections at least one extinguisher should be discharged before an assembly of employees for purposes of instruction. Recharging should be done at this time and date of recharging and signature of the peson performing the operation should be recorded on the tag attached to extinguisher to indicate operable condition and to furnish reference in case of investigation.

(Other handy bulletins covering first aid fire appliances will appear from time to time in the fire Protection for Industry Section. Watch for them. Clip and use for instant reference in your industrial fire prevention notebook.)


DRUM PUMP
SOLVENTS IN DRUMS
PUMPS FOR GASOLINE, ETC. DRAW FROM BURIED TANKS
STEEL SHELVES FOR SAFETY CANS
PORTABLE PUMP TANKS
PUMP TANKS FOR OILS
UNOPENED DRUMS ON STEEL RACKS (MAY BE THREE TIERS HIGH)
SLATTED STEEL SHELVES FOR SMALL UNOPENED CONTAINERS
CONCRETE PLATFORM

Suggested floor plan for safe storage and dispensing rooms for flammable liquids, as developed by the Associated Factory Mutual Fire Companies' Inspection Department.

Class of Liquid	*Hazard Scale*
Ether	100-110
Gasoline	90-100
Kerosene	30- 40
Parraffin Oil	10- 20

FLAMMABLE LIQUIDS NEED *Special* HANDLING AND STORAGE

Liquids with flammable or explosive vapors are just so much dynamite inside a plant, if improperly handled or stored.

WHILE the use of appreciable quantities of flammable liquids in production requires buried tanks, outdoor pumps and closed piping for safest practice, many plants have neither the facilities nor the need for such bulk supplies. In such cases, and where pigment settling is a problem, they rely on drums and small containers, in the handling of which there is considerable variation.

Aside from container construction, the potential fire or explosion hazards are usually determined by the size or capacity of the drum or can. Obviously, the contents of a 55-gallon I.C.C. drum will spread over a larger area and cause a greater vapor hazard than a 20-gallon volume would. The smaller the container, the safer the storage, in general. Paints, thinners, lacquers, solvents and similar flammable liquids in quart, gallon or five-gallon original sealed containers cannot be considered as introducing any alarming hazards into the plant. They may be stored safely in moderate quantities with other materials except at or near processes which would subject them to heat.

The matter of container construction is one for which the purchasing department is directly responsible. For drums and other containers crossing state lines, the rules of the Interstate Commerce Commission will assure safe, rugged construction automatically. For others, buyers are either dependent upon local or state rules, or must make their own specifications for safe handling. Light, flimsy container construction or cans with carelessly soldered joints spell trouble in handling. Jolts, falls and low temperature exposures can cause extensive ruptures or slow, insidious, equally dangerous leaks. Re-used drums require careful test and inspection.

The fire hazard of flammable liquids is determined mainly by individual chemical and physical properties, and common hazardous liquids can be grouped in one of four different classes according to these characteristics. The classes have been scored by field experience in a numerical scale which is shown in the accompanying table, the most hazardous group appearing at the top of the list.

Underwriters' Laboratories groups all flammable liquids by comparison with well-known products in regard to their fire hazard and gives them a numerical value that corresponds, so that the degree of hazard can be readily identified on a 0 to 100 scale as in the table. The volatility of the liquid or "evaporatability" is one of the factors involved in classification, the ether class being at the upper extreme and paraffin oil at the lower, in open containers. The probable temperature at which a liquid starts giving off vapors that form a flammable mixture in sourrounding air determines its flash point. In addition, there is both an upper and lower limit to the per cent of the vapor in air (by volume) which will ignite or explode.

Anyone who has ever tried to adjust an auto carburetor can testify to the existence of those limits for gasoline vapor explosion—there can be too much or too little air in the mixture.

Leaks or Spills

The point is important in dealing with flammable liquid leaks or spills in fire prevention. These liquids are moderately safe as long as they are kept in a sealed container. Once released into the air, as when a drum is damaged by accident or corrosion, the vapors can be ignited at the proper mixture by flames, sparks or even heated surfaces in the area.

In the table entitled "Suggested Standards for Container Storage" presented with this article there are shown sprinkler spacings recommended by the Associated Factory Mutual Fire Insurance Companies for each of the flammable liquid classes according to the volume and type of storage. Auxiliary storage precautions include the elimination of crowded conditions as well as the

This famous

BUFFALO *better-built*

FIRE EXTINGUISHER

is the type you need for Class A Fire Hazards

in HEATED or UNHEATED buildings

Carbon dioxide gas generates the internal pressure which expels a powerful stream of clear water 40 to 50 feet from this rugged, long-lived Buffalo *better-built* Fire Extinguisher. Operation is simple and instantaneous. You simply invert the extinguisher, strike it on the floor, thus puncturing the carbon dioxide cartridge.

For heated buildings, specify the Clear Water type; for *unheated* buildings, the Non-Freeze type which will not freeze at 40° below zero.

Both are approved for Class A fire hazards — wood, paper, rubbish, textiles and other ordinary combustibles.

BUFFALO FIRE APPLIANCE
CORPORATION
DAYTON 1, OHIO

2½ gallons — Polished Copper or Chrome Plated

provision for periodic checks to make certain that no combustible materials are stored nearby. Heat, which may increase internal pressures in sealed containers until they burst, should also be prohibited in the vicinity.

The Factory Mutual Inspection Department favors a detached storage building, built of brick or other non-combustible materials, with an adjoining dispensing room, for maximum fire safety. Their recommended treatment for such an arrangement is presented here in diagram form. Forced ventilation is required for dispensing rooms with operation ranging from five to 15 air changes per hour, depending upon the class of hazards involved. Explosion-venting windows and explosion-proof electrical installations are mandatory, while static electricity should be elmiinated by proper grounding. In addition to the sprinkler system of fire protection, dry chemical, carbon dioxide or foam extinguishers should be available for emergency use.

In the storage building construction, walls, floors and ceilings should be made of eight inches of brick or concrete, four inches of reinforced concrete, or eight inches of tile set in Portland cement mortar and plastered on both sides with Portland cement plaster to a thickness of ¾ inch. Doors should be provided with non-combustible sills raised at least six inches and should be protected by self-closing fire doors. Racks and shelving should be non-combustible and floors should be waterproofed and arranged to drain to a safe location. Approved waste cans are required for oily rags, etc., and should be emptied daily.

Yard Storage

Where yard storage of drums has been found necessary, special precautions are similarly important in fire prevention. Drums should be located at least 100 feet from the nearest building. Flammable liquids which boil at temperatures less than 125° F. should be stored out of the sun and should be limited to 100-drum lots with at least 75 feet clear distance between lots. Other liquids have a 300-drum maximum in lots spaced 50 feet apart. No lot should be more than 200 feet from a fire hydrant, and all lots should have drainage away from buildings and should be preferably in fenced-in areas free of grass or other combustibles. Because drum failure occurs generally at the head, the best storage plan is to stand the drums on end, one high.

In the actual handling of flammable liquids inside a plant, it is wise to avoid the use of glass bottles or open containers. A drum-pump is safest in liquid transfer to small containers, as the drum is kept vertical and permits no flow except through the pump itself.

Where small amounts of the liquid are used in production, as in paint shops, bench-dipping, rubber-working, etc., safety cans offer most fire protection. Approved cans have pouring outlets equipped with a tight-fitting cap which can be held open only with hand pressure, but which automatically releases heat-induced internal pressure. Overturning permits no spillage. Solvent cans have flash-arrester screens at the outlet.

For bench washing operations, two types of approved bench cans are available: one has a fusible-link arrangement on the cover causing it to close automatically in case of fire, the second has a flame-arrester screen on a spring. The screen remains up except when the part to be cleaned is immersed by a downward pressure.

SUGGESTED STANDARDS FOR CONTAINER STORAGE

The following table shows the maximum amount of various types of flammable liquids which can be safely stored in sealed containers under the conditions indicated. In assortments of liquids, the most volatile governs.

TOTAL STORAGE IN AREA

TYPE OF LIQUID	IN THE OPEN WITHIN BUILDING		IN STORAGE ROOMS SEPARATED FROM OTHER AREAS BY FIRE WALLS		IN ATTACHED BUILDINGS	
	Max. Gal.	Sprinkler Spacing	Max. Gal.	Sprinkler Spacing	Max. Gal.	Sprinkler Spacing
Ether, carbon disulfide, pentane,, petroleum ether	15	10 ft.	100	*5 ft.	500	*5 ft.
Gasoline, acetone, benzine, naphtha benzol, lacquer thinner	55	10 ft.	500	7 ft.	2,000	7 ft.
Kerosene, alcohol, safety solvents, lacquer, paint, enamel, japan, varnish, rubber cement	220	10 ft.	2,000	8 ft.	5,000	8 ft.
Cutting oil, lubricating oil, vegetable oil, lard oil, fish oil	550	10 ft.	5,000	10 ft.	10,000	10 ft.

* Baffles are needed between automatic sprinkler heads when spacing is less than 6 feet.

WATCH THOSE *Welding Sparks!*

Plant fires and explosions resulting from welding accidents can be eliminated by using good fire-protective equipment, by assuring that good welding equipment is in the hands of trained operators, and by making regular inspections.

THE tremendous increase in the use of welding and cutting torches in both large and small plants should be reason for regular and careful inspection by persons responsible for plant safety. A study of welding accidents reveals that the majority of them are due to *worn or faulty equipment, careless welders, lack of adequate safety training and inspections,* or a combination of any of these factors.

Many plants have portable welding equipment which is taken anywhere in the plant. It is because of the many dangerous situations which can arise from welding and cutting equipment set up in temporary places that special attention should be given to fire and explosion hazards. Portable oxygen-acetylene outfits should be fully equipped with all necessary standard safety precautions, regardless of the type of job being done. A steel plate should be placed between tanks permitting the oxygen tank to be removed should the acetylene catch fire. A "T" wrench, eighteen inches long, should be available to shut off the acetylene tank in case of fire. Many fires could be quickly extinguished if the operator had a long wrench to close the valve.

One of the most important rules concerning safety in all types of welding equipment is to keep oil away from the oxygen regulators and cylinders. Mixture of oxygen and oil can cause a very serious explosion.

Where tanks are set up in a manifold system, a good flash-back arrestor and blow-out seal through the roof of the building are essential to safe operation.

The importance of careful, trained operators to assure the safe operation of welding equipment can never be over-stressed. Operators should be trained in safe welding techniques and generalities should be avoided during the training. Prospective welders should be given a good set of practical rules and they should be given illustrations on how accidents can happen.

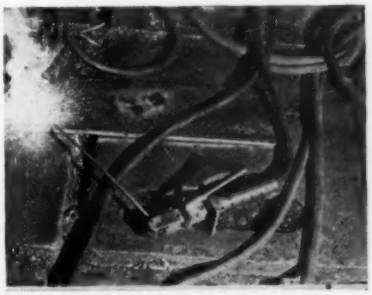
Here are some practical rules:

1. Close valves of both tanks immediately when hose catches fire or when leaving the outfit.
2. If a tank is leaking, remove it from the building immediately. *Do not attempt to repair it.* Proper mixture of acteylene and air will cause an explosion.
3. Keep oil or grease away from cylinder caps and valves. Do not wear greasy gloves or store tanks where grease can drop on them. An explosion may result if this rule is violated.
4. Greasy and oil-soaked clothing spells death to a welder.

Here are some accident illustrations:

1. A welder used an empty drum to place his work on. At lunch time he put the cutting torch tip in the bung hole of the drum. When he lit the torch after lunch the drum blew up and killed him. Acetylene had been

The good and the bad in welding practice. Electrode holders should never be placed where contact with conducting material can be made. The orderly welding department shown (courtesy Lincoln Electric Co.) at right has individual fume-exhausting and shielding and a fire-proof flooring.



leaking from the torch and turned the drum into a bomb.
2. A man was burned to death when a spark landed in his greasy clothing. Fire enveloped him so quickly that a fire blanket nearby was of no use.
3. In one construction job, five men were killed when compressed air to an oil-burning torch was replaced by oxygen.

This last mentioned accident illustration is but a variation of many deaths and explosions resulting throughout the country by men attempting to use oxygen from the welding unit to replace air. It seems that many persons believe the word "oxygen" a synonym for "compressed air." This error should be corrected. Everyone should know that if oxygen equipment is used for any other purpose than welding and cutting an explosion can result. Oxygen pipe lines should be painted a special color and a warning sign placed at the outlet of each pipe. *Oxygen should not be used to run pneumatic tools—to start internal combusion engines—to blow out pipe lines—or to replace compressed air in any way whatever.*

Other Hazards

There are many materials which give off toxic fumes when being worked on with welding or cutting torches. Brass, copper, zinc, aluminum, nickel, chromium, lead and bronze are but a few examples. Operators working over this type of material should be using a respirator or air line respirator hood.

Inspection of welding equipment is most essential to safe operation. With the danger of fires and explosion in mind, the inspector must ascertain how near the job is to explosive materials and in case of cutting, where the piece will go after it is burned off. One of the main causes of welding and cutting accidents is the promiscuous use of cutting torches. The idea that anybody can use a cutting torch and that cutting can be done in any place at any time is an idea that must be gotten away from.

Know Equipment

The good inspector must have a practical and mechanical knowledge of all welding equipment. He must have a thorough understanding of the causes of fire and explosions. This means a thorough study of accidents from an over-all view point. The good inspector must insist that each prospective welder in his plant be given a physical examination before any welding permit is issued.

In order to reduce the hazards of welding equipment in the plant, each inspector or safety engineer must have a firm and sincere belief that welding can only be made safe *by good equipment, trained operators and first class inspection.*

Are you doing it the HARD WAY?

HERE'S THE EASY—SAFE—SPEEDY WAY

Here is the PLUNGER CAN — a time-study man's delight. Designed to speed-up production on every cleaning — sponging — swabbing operation it pays for itself through saving of solvents, and at the same time reduces the hazards of fire and explosion.

The PLUNGER CAN moistens cleaning rag, sponge or swab in one quick easy motion — one hand action. Other hand remains free to hold object being cleaned. No solvent spilled, splattered or wasted . . . amount of dampening controlled by length of stroke.

Perfect for operations using any flammable or volatile liquids — gasoline, alcohol, ether, thinner, carbon tet., etc. Perforated dasher blocks fire and is self-extinguishing. Direct delivery of fluid checks diffusion of explosive vapors — minimizes toxic atmosphere around operation.

Available in 5 sizes 1 pint through 2 gal.

Approved by Associated Factory Mutuals.

Write for free, illustrated catalog showing the complete *Protectoseal System* for increased speed, economy and safety for all industry.

THE PROTECTOSEAL COMPANY, 1970 S. Western Ave., Chicago 8

In Canada: SAFETY SUPPLY CO., Toronto

SAFETY ENGINEER AVAILABLE

1. Worker safety educating.
2. Industrial safety planning.
3. Accident and injury analysis.
4. Accident prevention-work methods coordination.
5. Program and inspection development.
6. Accident cause and cost reduction.
7. Packaged into one safety engineer.

Box 732

This month the accent of our illustration is on the positive—on the good practice side—with a fire prevention emphasis involving a common daily scene in many of the nation's plants. During the countless welding and cutting operations required in regular production activity or in maintenance of machinery, it takes but a moment to protect the adjacent area with a fireproof drop-cloth. The bucket of water shown in the picture is a sensible added precaution at this conveyor line.

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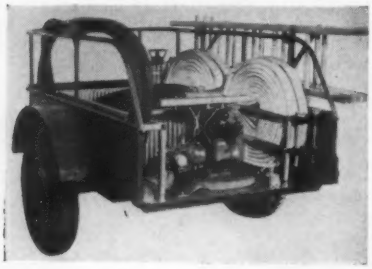
(Courtesy Linde Air Products)

New Products

(Continued from Page 37)

PORTO-PUMPER—A complete high-pressure portable pumping and fire-fighting unit is offered for industrial use in the PORTO-PUMPER, a development of Porto-Pumper, Inc., Detroit. Mounted on a two-wheeled trailer, the Porto-Pumper consists



basically of the Porto-Pump (a gasoline-driven high-pressure utility pump), 75 feet of supply hose, 250 feet of fire hose, an 18 foot 3-section extension ladder, fire axe and hand-type extinguisher.

NP 127

SCUM-CLEANER— Berman Chemical Company, Toledo, Ohio, offers Saf-T-Klenz, a cleaning compound developed especially for removing the slippery scum from hard-to-clean shower rooms, steam rooms and scummy pool floors and decks. The manufacturer claims that this concentrated dry - powder - form cleaner, reported harmless to skin, clothing, floors and drains, will remove long standing rust stains, lime deposits, soap oil, body grease, algae formations and other discolorations. The product is said to be particularly effective in cleaning porcelain and to contain no carbolic or disinfectant odor.

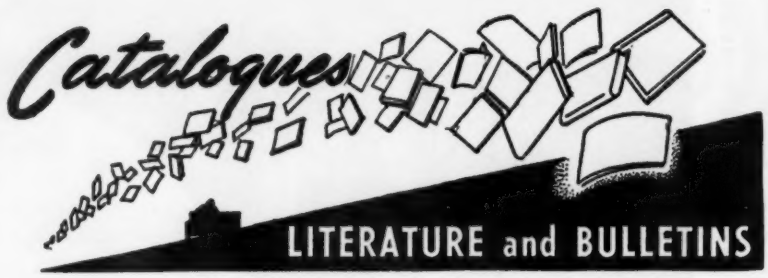
NP 128

NON-SLIP FLOOR WAX— A new slip-resistant floor wax has been announced by the Vestal Laboratories, Inc., St. Louis. The product, Vesta-Gloss S.R., is reported applicable to any floor, regardless of type or color, and features free, low and self-leveling properties. It is claimed that the wax dries to a high lustre without polishing, is resistant to wear and water, is an aid in cutting down and eliminating injuries due to slippery floors.

NP 129

SYNTHETIC APRON—Acme Safety Products Company, Toledo, announces a synthetic rubber apron called "Sursafe" which is claimed to be resistant to acids, oils, solvents, fluids, paints, chemicals and abrasion. Made in three weights, the apron is said to be unaffected by extremes of heat or cold, and to be non-flammable, non-toxic and odorless. Sizes can be furnished to specification.

NP 130



The publications featured on these pages were written by experts. They may be obtained without charge. To obtain these use the postcard bound into this issue.

FL 605—Carbon Monoxide Alarm . . . Mine Safety Appliances Company has issued a four-page bulletin containing information on the M. S. A. Carbon Monoxide Alarm designed for protection against dangerous concentrations of carbon monoxide around industrial premises. Ask for Bulletin No. DR-3.

FL 606—Goggle Cleaning Cabinet . . . Circular from the Wilkins Company containing complete information about K-Lens-M Dispenser Cabinets and K-Lens-M Lens Cleaner for eyeglasses, safety goggles and face shields.

FL 607—Industrial Garments . . . Catalog information is available from Hodgman Rubber Company describing its line of protective outerwear for workers including industrial aprons designed to give protection against acids and abrasions.

FL 608—Eye Protection . . . A complete welding and safety equipment catalog including information on face shields, goggles and helmets may be had from the Dockson Corporation, manufacturers of welding safety equipment.

FL 609—Ventilation System . . . ILG Electric Ventilating Company pamphlet "Night Cooling" of Industrial Buildings, File No. 20139, describing use of fan ventilators for maintenance of ideal industrial atmospheric conditions by installation of ILG Night Cooling Systems.

FL 610— Coil Cleaner . . . Information from Standard Solvent Company on Clean-A-Coil unit used on external or submerged indirect water heaters for cleaning and safeguarding heater tubes from clogging by mineral deposits.

FL 611—Powdered Soaps . . . Lightfoot Schultz Company offers bulletin information on several types of industrial soaps which incorporate a new idea in hand cleansing efficiency. Powdered soap dispenser information is also included.

FL 612—Power-Pak . . . Available from Power-Pak Products Inc., is a pamphlet describing a compact, combination Carbon Dioxide Tire Inflator-Fire Extinguisher unit adaptable for both emergency tire inflation and fire fighting purposes.

FL 613—Floor Safety . . . Descriptive literature from Non-Skid Surfacing Corporation, manufacturers of Non-Skid, a non-slip plastic composition for application on industrial stairs, floors, ramps and platforms.

FL 614—Dust Collector . . . A new 19-page illustrated booklet covering views, capacity and dimension tables of American Air Filter Company's Type D Roto-Clone dynamic precipitator, a device particularly adapted to the dry collection of granular industrial dust.

FL 615—Protective Masks . . . Pamphlet information issued by Martindale Electric Company describing a compact face mask designed specifically for nose and throat protection against non-toxic dusts. Ask for Bulletin 353.

FL 616—Protective Clothing . . . Standard Safety Equipment Company pamphet describing StaSafe impregnated fabric garments, aprons, and arm, leg and foot protection for industrial workers. Includes prices and specifications.

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HIGH-PRESSURE MOLDED OF LAMINATED BAKELITE

-The hats that take care of their heads!

M.S.A. Skullgards

FEATURES

- Light and Comfortable
- Tremendous resistance to impact
- Weatherproof
- Cannot Soften, Swell or Gain in Weight
- High Dielectric Strength
- Natural Ventilation
- 7 Popular Types

Year after year, Skullgards lead in popularity for every head protection need, because these are the work hats that have every advantage today's workers need . . . strength, assured by *high pressure* molding of finest materials . . . unquestioned durability . . . lightweight balance on the head . . . and easy fitting comfort that makes friends with the wearer from the start! Check the features—write for the detailed Skullgard story in Bulletin DK-11.

MINE SAFETY APPLIANCES COMPANY

Braddock, Thomas and Meade Sts. • Pittsburgh 8, Pa.

District Representatives in Principal Cities

In Canada: MINE SAFETY APPLIANCES COMPANY OF CANADA, LIMITED

TORONTO • MONTREAL • CALGARY • VANCOUVER • NEW GLASGOW, N. S.

***Occie Hazz Says:**

"There are some jobs a man wouldn't touch with a 10-foot pole, if he didn't have ASSURANCE from his safety engineer that full protection was being provided him."

* Our Cracker-Barrel Expert.

OCCUPATIONAL HAZARDS Magazine Helps the Safety Engineer to Achieve That PROTECTION ASSURANCE . . .

This Month—For the Latest in Protection Assurance . . .

WE PRESENT:

RECREATION PROGRAMS . . .

Small plants can have well-rounded recreation programs just like the big ones—here are a few tips.

STRONG MEDICINE . . .

Strong Medicine is what we call the ILGWU worker health protection worked out with management.

LABORATORY PROTECTION . . .

You either have it or you don't, and if you don't . . . well, no one is safe.

FLAMMABLE LIQUID HAZARDS . .

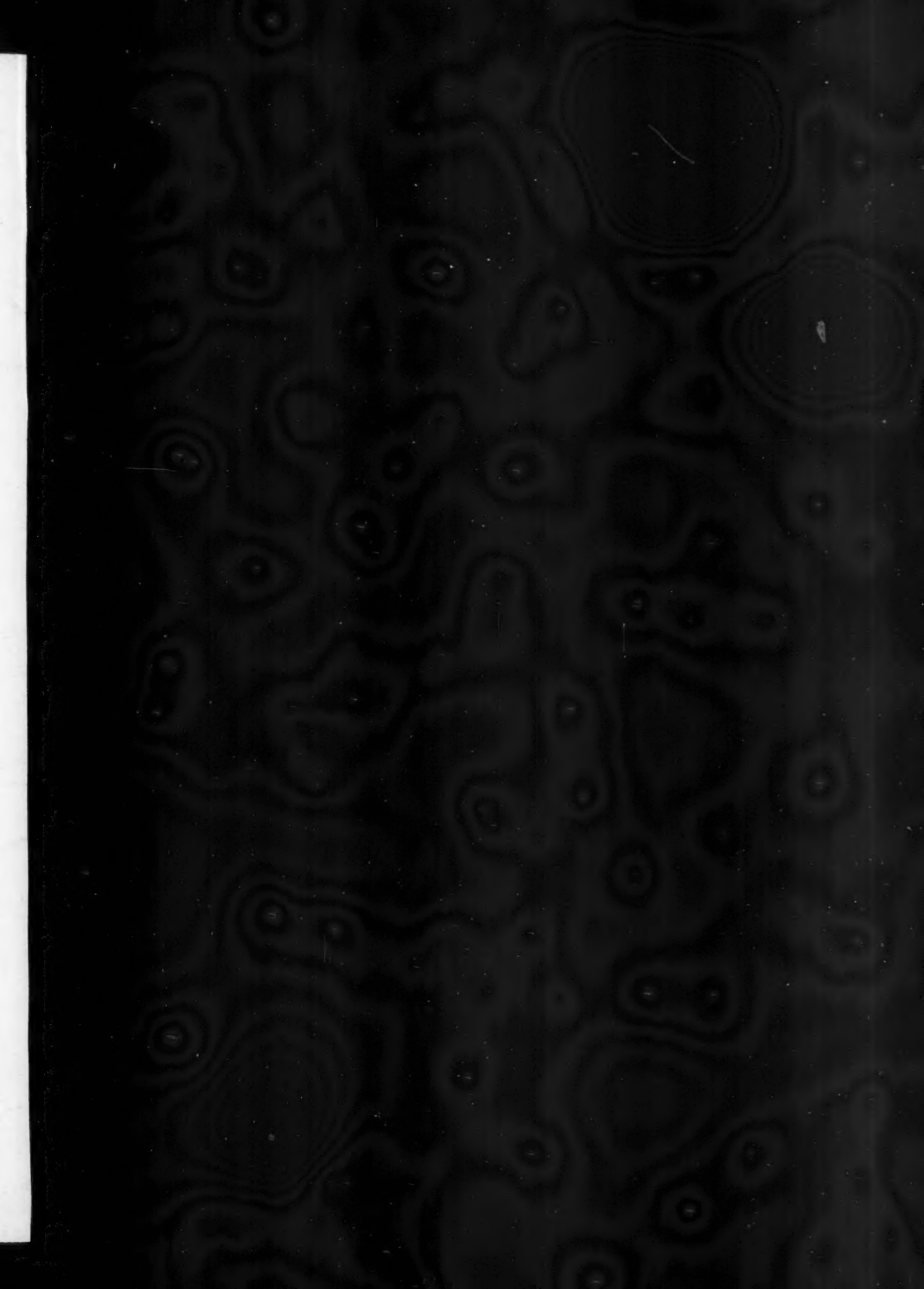
You need more than kid gloves for handling or storing drums, cans, etc.

WHERE THERE'S SMOKE . . .

What do you know about industrial tars and occupational cancer? Don't miss this one.

Plus . . .

Timely articles on fire prevention advances in our exclusive section: FIRE PROTECTION FOR INDUSTRY . . .

And . . .

The monthly health and safety departments packed full of reference information: DUST HAZARD FILE, RIGHT OFF THE DOCKET, PRESS-PROOFED PREVENTION, THE PAY OFF, FROM MANAGEMENT'S POINT OF VIEW, FIRST AID FIRE APPLIANCE DATA, NEW PRODUCTS, FREE LITERATURE and many others.